DC INVERTER VRF PLUS WATER HEATER SOLUTION

Service Manual

（T1/R410A）

GREE ELECTRIC APPLIANCES INC. OF ZHUHAI

CONTENTS

PRODUCT 2

1 MODELS LIST 2
1.1 OUTDOOR UNITS 2
1.2 INDOOR UNIT 3
1.3 HYDRO-BOX 9
1.4 WATER TANK 10
2 NOMENCLATURE 11
2.1 NOMENCLATURE OF OUTDOOR UNIT 11
2.2 NOMENCLATURE OF INDOOR UNIT 11
2.3 NOMENCLATURE OF HYDRO-BOX 12
2.4 NOMENCLATURE OF WATER TANK 12
3 FUNCTION 13
4 PRODUCT DATA 14
4.1 PRODUCT DATA OF OUTDOOR 14
4.2 PRODUCT DATA OF INDOOR UNIT 15
4.3 OPERATION RANGE 40
4.4 HYDRO-BOX 41
4.5 WATER TANK 43
4.6 OPERATING TEMPERATURE RANGE 44
5 CORRECTION FOR PRODUCT CAPACITY 45
5.1 INTRODUCTION TO CAPACITY CORRECTION 45
5.2 CAPACITY CODE 45
5.3 FORMULA OF CAPACITY CORRECTION 45
6 PRINCIPLE OF WORK 48
6.1 SYSTEM FLOWCHART 48
6.2 EXPLANATION OF FLOWCHART 49

CONTROL 51

1 CONTROL OF THE UNIT 51
1.1 INTEGRAL CONTROL OF THE UNIT 51
1.2 OPERATION FLOWCHART 54
2 CONTROL FUNCTION OF THE UNITS 68
2.1 CONTROL FUNCTION OF THE OUTDOOR UNIT 68
2.2 CONTROL FUNCTION OF INDOOR UNIT 72
3 WIRELESS REMOTE CONTROLLER 81
4 WIRED CONTROLLER 84
4.1 WIRED CONTROLLER OF INDOOR UNIT 84
4.2 WIRED REMOTE CONTROLLER FOR HYDRO UNIT 86
5 FIELD CONTROLLER 97
5.1 FUNCTION 97
5.3 DISPLAY VIEW 99
5.4 CONNECTION BETWEEN REGION CONTROLLER AND THE UNIT 100
6 CENTRALIZED CONTROLLER 101
6.1 FUNCTION 101
6.2 CASE STUDY 101
7 MONITORING SOFTWARE 114
7.1 FUNCTION 114
7.2 CONNECTION BETWEEN THE COMPUTER AND THE UNIT 114
7.3 HARDWARE 116

INSTALLATION 123

1 PRECAUTIONS FOR INSTALLATION 123
1.1 PRECAUTIONS FOR INSTALLATION 123
1.2 KEY POINTS OF INSTALLATION 124
1.3 FLOW CHART OF INSTALLATION 126

2 TOOLS FOR INSTALLATION 127
2.1 Common Tools 127
3 SELECTION OF INSTALLATION MATERIAL 128
3.1 Refrigerants Pipeline 128
3.2 Circulating Pipe 128
3.3 Discharge Pipe for Condensate 128
3.4 Heat Insulating Materials 129
3.5 Communication Wire and Control Wire 129
3.6 Power Cord 129
3.7 Suspender and Bracket 129
4 INSTALLATION SCHEMATIC DIAGRAM 130
4.1 Installation Schematic Diagram of Units with Side Air Outlet 130
4.2 Installation Schematic Diagram of Units with Top Air Outlet 131
5 INSTALLATION OF OUTDOOR UNIT 135
5.1 Hoisting of Unit 135
5.2 Selection of Installation Site 137
5.3 Dimension and Hole Site 138
5.4 Space dimension for installation of the unit is shown below. 139
6 INSTALLATION OF INDOOR UNIT 143
6.1 Duct Type 143
6.2 4-way cassett type Unit 149
6.3 1-way cassett type Unit 155
6.4 Wall mounted type 159
6.5 Floor Ceiling Type 161
7 INSTALLATION OF HYDRO-BOX 166
7.1 Dimension of Hydro-box 166
7.2 Installation Method and Dimension of Hydro-box 166
7.3 Connecting Pipe between Outdoor Unit and Hydro-box 170
7.4 Connection Requirements of Hydro-box and Water Tank 170
8 INSTALLATION OF WATER TANK 171
8.1 Cautions of Installation 171
8.2 Selection of Installation Position of Water Tank 171
8.3 Installation Cautions 171
9 INSTALLATION REQUIREMENTS OF REFRIGERANT PIPING 172
9.1 Specification 172
9.2 Allowable Length and Height Differences of the Refrigerant Piping between the Indoor and Outdoor Units 172
9.3 Selection of Y-Type Branch Pipe 174
9.4 Selection of Diameter 174
10 INSTALLATION OF REFRIGERANT PIPING 175
10.1 Flow Chart of Installation 175
10.2 Three Principles of Refrigerant Piping Installation 176
10.3 Installation of Metal Embedded Pipe 176
10.4 Installation of Carriage of Refrigerant Piping 176
10.5 Management and Machining of Refrigerant Piping 177
10.6 Installation of Refrigerant Piping 180
10.7 Welding of Copper Pipe 183
10.8 Cleaning of Refrigerant Piping 186
10.9 Pressure Maintaining and Leak Hunting 187
10.10 Heat Preservation of Refrigerant Piping 188
10.11 Vacuum Pumping 190
10.12 Refrigerant Charge 191
11 INSTALLATION OF ELECTRONIC EXPANSION VALVE PARTS 193
11.1 Direction Requirements 193
12 INSTALLATION OF CONDENSATE PIPE 194
12.1 Material Quality Requirements for Condensate Pipe 194
12.2 Installation of Drainage Pipe for Different Types of Indoor Unit 198
12.3 Test for Condensate Pipe 202
12.4 Requirements of Heat Preservation 203
13 INSTALLATION OF WATER PIPELINE 204
13.1 Pipeline between Hydro-box and Water Tank 204
13.2 Connecting Pipe between Outdoor Unit and Hydro-box 205
13.3 Connection Requirements of Hydro-box and Water Tank 205
13.4 Installation Requirements of Water Pipeline 205
14 ELECTRICAL INSTALLATION 206
14.1 Precautions for Electrical Installation 206
14.2 Specifications of power cord & circuit breaker 207
14.3 Wiring Sketch Map 207

14.4 DIAL-UP OF UNIT 208
15 DEBUGGING OF THE UNIT 214
15.1 PREPARATION FOR THE DEBUGGING 214
15.2 DEBUGGING OF COOLING MODE 215
15.3 DEBUGGING OF HEATING MODE 215
15.4 DEBUGGING OF WATER HEATING 216

MAINTENANCE 218

1 PURPOSE 218
2 ROUTINE WORK 218
2.1 CLEANOUT OF THE WATER SYSTEM 218
2.2THE CLEANOUT OF FINNED HEAT EXCHANGER 218
2.3 DAILY MAINTENANCE 218
3 ANTI-FREEZING PROJECT IN WINTER 220
3.1 CAUTIONS OF WATER SYSTEM 220
3.2 CAUTIONS OF OUTDOOR UNIT 220

SERVICING 223

1 LIST OF UNIT ERRORS 223
1.1 LIST OF ERROR DISPLAY ON WIRED CONTROLLER 223
1.2 DISPLAY CODE ON DIGITAL TUBE OF OUTDOOR MAINBOARD 226
1.3 DISPLAY OF THE NUMBER OF INDOOR UNITS 226
2 FLOW CHART OF TROUBLESHOOTING 227
2.1 HIGH-PRESSURE PROTECTION 227
2.2 LOW-PRESSURE PROTECTION 228
2.3 EXHAUST TEMPERATURE PROTECTION 229
2.4 COMPRESSOR OVERCURRENT PROTECTION 229
2.4 COMPRESSOR OVERCURRENT PROTECTION 230
2.6 WATER-FULL PROTECTION 233
2.7 ERROR WITH ROOM SENSOR, TUBE-INLET, TUBE MIDDLE AND TUBE-EXIT SENSOR; ERROR WITH ROOM SENSOR, TUBE-INLET, TUBE MIDDLE AND TUBE-EXIT SENSOR AND EXHAUST / CASING TOP SENSOR; ERROR WITH THE COMPRESSOR BOTTOM SENSOR 233
2.8 NO ENERGIZATION TO THE UNIT AND MAINBOARD 234
2.9 PFC PROTECTION 235
2.10 IPM PROTECTION 236
2.11 TRIPPING 237
2.12 RADIATOR OVERHEAT PROTECTION 238
2.13 OVERVOLTAGE PROTECTION OF DC VOLTAGE 239
3 CIRCUIT DIAGRAM 240
3.1 INTRODUCTION OF MAJOR ELECTRICAL ELEMENTS 240
3.2 WIRING DIADRAM 241
4 DISASSEMBLY AND ASSEMBLY PROCEDURE OF MAIN PARTS 254
4.1 INTRODUCTION OF MAIN PARTS 254
4.2 OUTDOOR UNIT 258
4.3 DISASSEMBLY AND ASSEMBLY OF INDOOR UNIT 277
5 EXPLODED VIEWS AND PART LIST 288
5.1 OUTDOOR UNIT 288
5.2 HYDRO UNIT 294
5.3 INDOOR UNIT_EXPLODED VIEW AND PARTS LIST 304

PRODUCT

PRODUCT

1 MODELS LIST

1.1 Outdoor Units

Model	Cooling (Btu/h)	Heating (Btu/h)	Min.Water Output L/h	Max.Water Output L/h	Power Supply	Refrigerants	Appearance
GMV-Pds100W/Na-K	34120	37532	107	107	220~240V~1Ph~50Hz	R410A	
GMV-Pds120W/Na-K	40944	47768	107	107			
GMV-Pds140W/Na-K	47768	52545	171	171			
GMV-Pds160W/Na-K	54592	60051	171	171			
GMV-Pds224W/Na-M	76428	85300	258	500	380~415V~3Ph~50Hz	R410A	
GMV-Pds280W/Na-M	95536	107478	258	650			

Note:1Ton =12000Btu/h = 3.517kW

Notes：

① The data in the tables is subject to change so the data on the nameplate shall govern.

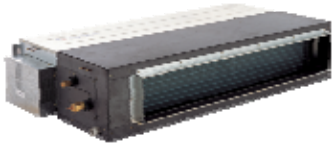
② Water output is measured based on nominal water heating conditions

③ Set output according to different configure of the tank so there are max. water output and min.water output.

Cooling	Heating
Indoor :27℃(80.6℉)/19℃(66.2℉) Outdoor: 35℃(95℉)/-	Indoor: 20℃(68℉)/- Outdoor : 7℃(44.6℉)/6℃(42.8℉);

1.2 Indoor Unit

1.2.1 Common ESP Duct Type Indoor Unit

Model	Capacity		Ref	Power Supply	Appearance
	Cooling (Btu/h)	Heating (Btu/h)			
GMV-R22P/Na-K	7507	8530	R410A	220~240V ~ 1Ph~50Hz	
GMVL-R22P/Na-K		/			
GMV-R25P/Na-K	8530	10236			
GMVL-R25P/Na-K		/			
GMV-R28P/Na-K	9554	10918			
GMVL-R28P/Na-K		/			
GMV-R32P/Na-K	10919	12283			
GMVL-R32P/Na-K		/			
GMV-R36P/Na-K	12284	13648			
GMVL-R36P/Na-K		/			
GMV-R40P/Na-K	13649	15354			
GMVL-R40P/Na-K		/			
GMV-R45P/Na-K	15355	17060			
GMVL-R45P/Na-K		/			
GMV-R50P/Na-K	17061	19790			
GMVL-R50P/Na-K		/			
GMV-R56P/Na-K	19108	21496			
GMVL-R56P/Na-K		/			
GMV-R63P/Na-K	21496	23884			
GMVL-R63P/Na-K		/			
GMV-R71P/Na-K	24226	27296			
GMVL-R71P/Na-K		/			
GMV-R80P/Na-K	27297	30026			
GMVL-R80P/Na-K		/			
GMV-R90P/Na-K	30709	34120			
GMVL-R90P/Na-K		/			
GMV-R100P/Na-K	34121	37532			
GMVL-R100P/Na-K		/			
GMV-R112P/Na-K	38216	42650			
GMVL-R112P/Na-K		/			
GMV-R125P/Na-K	42652	46060			
GMVL-R125P/Na-K		/			
GMV-R140P/Na-K	47770	51180			
GMVL-R140P/Na-K		/			

Conversion Formula: Btu/h=kW×3412

1.2.2 High ESP Duct Type Indoor Unit (without water pump)

Model	Capacity		Ref	Power Supply	Appearance
	Cooling (Btu/h)	Heating (Btu/h)			
GMV-R22P/NaB-K	7507	8530	R410A	220~240V ~ 1Ph~50Hz	
GMVL-R22P/NaB-K		/			
GMV-R28P/NaB-K	9554	10918			
GMVL-R28P/NaB-K		/			
GMV-R36P/NaB-K	12284	13648			
GMVL-R36P/NaB-K		/			
GMV-R45P/NaB-K	15355	17060			
GMVL-R45P/NaB-K		/			
GMV-R56P/NaB-K	19108	21496			
GMVL-R56P/NaB-K		/			
GMV-R71P/NaB-K	24226	27296			
GMVL-R71P/NaB-K		/			
GMV-R90P/NaB-K	30709	34120			
GMVL-R90P/NaB-K		/			
GMV-R112P/NaB-K	38216	42650			
GMVL-R112P/NaB-K		/			
GMV-R140P/NaB-K	47770	51180			
GMVL-R140P/NaB-K		/			

Conversion Formula: Btu/h=kW×3412

1.2.3 **High ESP Duct Type Indoor Unit** (with water pump)

Model	Capacity		Ref	Power Supply	Appearance
	Cooling (Btu/h)	Heating (Btu/h)			
GMV-R22PS/NaB-K	7507	8530	R410A	220~240V ~ 1Ph~50Hz	
GMVL-R22PS/NaB-K		/			
GMV-R28PS/NaB-K	9554	10918			
GMVL-R28PS/NaB-K		/			
GMV-R36PS/NaB-K	12284	13648			
GMVL-R36PS/NaB-K		/			
GMV-R45PS/NaB-K	15355	17060			
GMVL-R45PS/NaB-K		/			
GMV-R56PS/NaB-K	19108	21496			
GMVL-R56PS/NaB-K		/			
GMV-R71PS/NaB-K	24226	27296			
GMVL-R71PS/NaB-K		/			
GMV-R90PS/NaB-K	30709	34120			
GMVL-R90PS/NaB-K		/			
GMV-R112PS/NaB-K	38216	42650			
GMVL-R112PS/NaB-K		/			
GMV-R140PS/NaB-K	47770	51180			
GMVL-R140PS/NaB-K		/			

Conversion Formula: Btu/h=kW×3412

1.2.4 Cassette type

Model	Capacity		Ref	Power Supply	Appearance
	Cooling (Btu/h)	Heating (Btu/h)			
GMV-R22T/NaA-K	7506	8530	R410A	220~240V ~ 1Ph~50Hz	
GMVL-R22T/NaA-K		/			
GMV-R28T/NaA-K	9550	10900			
GMVL-R28T/NaA-K		/			
GMV-R36T/NaA-K	12280	13650			
GMVL-R36T/NaA-K		/			
GMV-R45T/NaA-K	15360	17060			
GMVL-R45T/NaA-K		/			
GMV-R28T/Na-K	9550	10900			
GMVL-R28T/Na-K		/			
GMV-R36T/Na-K	12280	13650			
GMVL-R36T/Na-K		/			
GMV-R45T/Na-K	15360	17060			
GMVL-R45T/Na-K		/			
GMV-R50T/Na-K	17060	19790			
GMVL-R50T/Na-K		/			
GMV-R56T/Na-K	19100	21500			
GMVL-R56T/Na-K		/			
GMV-R63T/Na-K	21500	23880			
GMVL-R63T/Na-K		/			
GMV-R71T/Na-K	24230	27300			
GMVL-R71T/Na-K		/			
GMV-R80T/Na-K	27300	30030			
GMVL-R80T/Na-K		/			
GMV-R90T/Na-K	30700	34120			
GMVL-R90T/Na-K		/			
GMV-R100T/Na-K	34121	37532			
GMVL-R100T/Na-K		/			
GMV-R112T/Na-K	38210	42650			
GMVL-R112T/Na-K		/			
GMV-R125T/Na-K	42650	46062			

GMVL-R125T/Na-K		/			
GMV-R140T/Na-K	47770	49470			
GMVL-R140T/Na-K		/			

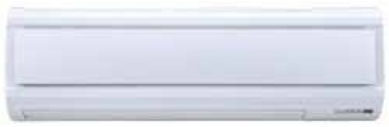
Conversion Formula: Btu/h=kW×3412

1.2.5 Single-side Cassette Unit

Model	Capacity		Ref	Power Supply	Appearance
	Cooling (Btu/h)	Heating (Btu/h)			
GMV-R22Td/Na-K	7506	8530	R410A	220~240V ~ 1Ph~50Hz	
GMVL-R22Td/Na-K		/			
GMV-R28Td/Na-K	9550	10900			
GMVL-R28Td/Na-K		/			
GMV-R36Td/Na-K	12280	13650			
GMVL-R36Td/Na-K		/			

Conversion Formula: Btu/h=kW×3412

1.2.6Wall mounted type

Model	Capacity		Ref	Power Supply	Appearance
	Cooling (Btu/h)	Heating (Btu/h)			
GMV-R22G/NaB-K	7507	8530	R410A	220~240V ~ 1Ph~50Hz	
GMVL-R22G/NaB-K		/			
GMV-R28G/NaB-K	9554	10919			
GMVL-R28G/NaB-K		/			
GMV-R36G/NaB-K	12284	13649			
GMVL-R36G/NaB-K		/			
GMV-R45G/NaB-K	15355	17061			
GMVL-R45G/NaB-K		/			
GMV-R50G/NaB-K	17061	19790			
GMVL-R50G/NaB-K		/			
GMV-R56G/NaB-K	19108	21496			
GMVL-R56G/NaB-K		/			
GMV-R22G/NaC-K	7507	8530			
GMVL-R22G/NaC-K		/			
GMV-R28G/NaC-K	9554	10919			
GMVL-R28G/NaC-K		/			
GMV-R36G/NaC-K	12284	13649			
GMVL-R36G/NaC-K		/			
GMV-R45G/NaC-K	15355	17061			
GMVL-R45G/NaC-K		/			
GMV-R71G/Na-K	24226	27297			
GMVL-R71G/Na-K		/			
GMV-R80G/Na-K	27297	30709			
GMVL-R80G/Na-K		/			

Conversion Formula: Btu/h=kW×3412

1.2.7Floor ceiling type

Model	Capacity		Ref	Power Supply	Appearance
	Cooling (Btu/h)	Heating (Btu/h)			
GMV-R28Zd/Na-K	9554	10919	R410A	220~240V ~ 1Ph~50Hz	
GMVL-R28Zd/Na-K		/			
GMV-R36Zd/Na-K	12284	13649			
GMVL-R36Zd/Na-K		/			
GMV-R50Zd/Na-K	17061	19790			
GMVL-R50Zd/Na-K		/			
GMV-R71Zd/Na-K	24226	27297			
GMVL-R71Zd/Na-K		/			
GMV-R90Zd/Na-K	30709	34121			
GMVL-R90Zd/Na-K		/			
GMV-R112Zd/Na-K	38216	42652			
GMVL-R112Zd/Na-K		/			
GMV-R125Zd/Na-K	42652	46064			
GMVL-R125Zd/Na-K		/			

Conversion Formula: Btu/h=kW×3412

Notes:

① Cooling only unit (GMVL type) has no items on heating;

② Noise was tested in semi-silenced room, so the actual noise value will be a little higher for change of ambient;

③ Nominal capacities are based on the following conditions:

Cooling	Heating
Indoor :27℃(80.6℉)/19℃(66.2℉) Outdoor: 35℃(95℉)/-	Indoor: 20℃(68℉)/- Outdoor : 7℃(44.6℉)/6℃(42.8℉)

1.3 Hydro-box

Model	Capacity(kW)	Appearance
RQD5GA-K RQD5GB-K RQ5GB-K	5	
RQD8GA-K RQD8GB-K RQ8GB-K	8	
RQD20LA-M	20	
RQ20LA-K	20	
RQD30LA-M	30	
RQ30LA-K	30	

Note:

① Select the model of hydro-box based on suggestions of the professional and local weather conditions.

② The data in the tables is subject to change so the data on the nameplate shall govern.

1.4 Water Tank

Model	Capacity (L)	Appearance
SXD250LC-K	250	
SXD300LC-K	300	
SXD350LC-K	350	
SXD400LC-K	400	
SXVD200LCJ/A-K	200	
SXVD300LCJ/A-K	300	
SXVD350LCJ/A-K	350	
SXVD400LCJ/A-K	400	
SXVD200LCJ2/A-K	200	
SXVD300LCJ2/A-K	300	
SXVD350LCJ2/A-K	350	
SXVD400LCJ2/A-K	400	

Note:

① Select the capacity of water tank based on suggestions of the professional and local weather conditions.

② The data in the tables is subject to change so the data on the nameplate shall govern.

2 NOMENCLATURE

2.1 Nomenclature of outdoor unit

GMV	□	□	-	Pds	120	W	/	Na	-	K
1	2	3		4	5	6		7		8

NO.	Description	Options
1	Code for type	GMV=Gree Multi Variable
2	Code for weather	Default:T1 T2:T2 weather T3:T3 weather
3	Code for model	L: Cooling Only Default: Heat pump
4	Units Series	Pd: DC inverter VRF Pds: DC inverter VRF with water heating
5	Nominal cooling capacity	120 represents 12kW Btu/h=kW×3412
6		W: outdoor unit
7	Refrigerant	Na: R410A
8	Power supply	K: 220-240V-1Ph-50Hz M: 380-415V-3Ph-50Hz

2.2 Nomenclature of indoor unit

GMV	□	-	R	□	□	/	Na	□	-	□
1	2		3	4	5		6	7		8

NO.	Description	Options
1	Code for type	GMV=Gree Multi Variable
2	Model Code	L: Cooling Only Default: Heat pump
3	Code for weather	Default:T1 T2:T2 weather T3:T3 weather
4	Nominal cooling capacity	36 represents 3.6kW Btu/h=kW×3412
5	Code for unit type	P=Duct type T=Cassette type Td=1-way Casstte type G=Wall mounted Zd=Floor ceiling
6	Refrigerant:	R410A
7	Design Sequence.	B :Second generation
8	Power complement	M: 380-415V-3Ph-50Hz； K ：220-240V-1Ph-50Hz

Example: GMV-R22G/NaB-K. A wall mounted indoor unit of GREE, and the nominal cooling capacity is 2.2kw. It's the second generation product。

2.3 Nomenclature of Hydro-box

RQ	D	5	G	A	□
1	2	3	4	5	6

S/N	Description	Options
1	Product Code : Hydro-box	
2	Fuction Code	D－Electric heating，Default－No electric heating
3	Heat Exchage Capacity	Rated heat exchange capacity of hydro-box, and unit is KW
4	Structure Code	G－Wall-mounting;L－Stand;W－Horizontal
5	Design S/N	Range it according to A.B.C…(omited when first design)
6	Power Supply Specification	M: 380-415V-3Ph-50Hz K: 220-240V-1Ph-50Hz

2.4 Nomenclature of Water Tank

SX	□	□	300	L	C	□	□
1	2	3	4	5	6	7	8

S/N	Description	Options
1	Assy Code	SX-Water Tank
2	Water Tank Type	V-Heat pump water tank for VRF units;Default－Common heat pump water tank
3	Fuction Code	D － Heating(with electricity);Default － Heating(without electricity)
4	Water Tank Capacity	Water tank Capacity; unit：（L）
5	Structure	B－Wall-mounting，L－Stand
6	Bearing or not	C－Bearing,Default－No bearing
7	Coil Type	J－Inner static heating ;JW－Outer static heating D－Coil for floor heating;Default－No heat exchange tube
8	Power complement	M: 380-415V-3Ph-50Hz K: 220-240V-1Ph-50Hz

3 FUNCTION

For Comfortable Air Conditioning	Auto Restart
	Fan Operation Mode
	LCD Remote Controller (Option)
	Auto Swing Function
	Ceiling Soiling Prevention
	Program Dry
	High Fan Speed Mode
	High Ceiling Application
	Two Select Thermo Sensor
	Hot Start
	Timer Selector
For Easy Construction and Maintenance	Fresh Air Intake Directly from The Unit
	Drain Pump
	Long Life Filter
	Ultra-Long life Filter (Option)
	Mold Resistant Treatment for Filter
	Filter Sign
	Mold Resistant Drain Pan
	Emergency Operation
	Self Diagnoses Function
For Flexible Control	Set Back Time Clock
	Double Remote Control
	Group Control By 1 Remote Controller
	Control By External Command
	Remote/Centralized Control

4 PRODUCT DATA

4.1 Product data of outdoor

Model \ Item			GMV-Pds100W/Na-K	GMV-Pds120W/Na-K	GMV-Pds140W/Na-K	GMV-Pds160W/Na-K	GMV-Pds224W/Na-M	GMV-Pds280W/Na-M
Rated Cooling Capacity		kW	10	12	14	16	22.4	28
Rated Heating Capacity		kW	11	14	15.4	17.6	25	31.5
Rated Water Heating		kW	5	5	8	8	12kw (default), 12~20kW	12kw (default), 12~30kW
Hot water		L/h	107	107	172	172	258~500	258~650
Supply Water Temp.		℃	50℃ (default), adjustable between 35℃-58℃					
Noise		dB (A)	56	56	58	60	58	58
Comprehensive Cooling Performance Coefficient(IPLV)		W/W	4.2	4.2	4.2	4.2	3.6	3.6
Comprehensive Energy-Efficiency Ratio		W/W	6.0	6.0	6.6	6.6	6.0	6.4
Compressor			DC Inverter Dual-rotor Type Compressor x 1				DC Inverter scroll×1+constant speed scroll ×1	
R410A Charge Volume		kg	5	5	7	7	15	16
Power Supply			220-240V-1Ph-50Hz				380-415V-3Ph-50Hz	
Rated Power	Cooling	kW	4.5	5	5.5	5.9	6.82	7.52
	Heating	kW	3.8	4.2	4.9	5.3	6.97	7.7
	Water Heating	kW	2	2	2.86	2.86	8	10.7
Rated current	Cooling	A	20.2	23	25	26.8	11.7	13.4
	Heating	A	18.1	19.1	22.3	24.1	11.4	13.76
	Water Heating	A	9	9	12.8	12.8	13.1	19.1
Dimension Size (mm) (W×D×H)			950×340×1250				930×770×1670	
Dimensions of Package			1110 ×450×1370				1010 ×850×1850	
Connection Pipe	Liquid Pipe (Air Conditioner)	mm	φ9.52	φ9.52	φ9.52	φ9.52	Φ9.52	Φ9.52
	Gas Pipe (Air Conditioner)	mm	φ19.05	φ19.05	φ19.05	φ19.05	Φ22.2	Φ22.2
	Liquid Pipe (Hot Water)	mm	φ12.7	φ12.7	φ12.7	φ12.7	Φ15.9	Φ15.9
	Gas Pipe (Hot Water)	mm	φ15.9	φ15.9	φ15.9	φ15.9	Φ19.05	Φ19.05
	Connection mode		Flared connection					
Net weight/Gross Weigth		kg	105/115	105/115	115/125	115/125	265/285	

Note:

① The comprehensive energy-efficiency ratio is (the cooling capacity obtained by indoor unit + Heating capacity of hot water / Power consumption. Example: ECOP= (8.0kW+（8.0kW+2.86kw）)/2.86 kW=6.6

② The performance data of the air conditioner unit are measured under rated working conditions.

③ The R410A charge volume above refers to the charge volume in the outdoor unit at the time of shipment. During installation, the charge volume of additional refrigerant shall be calculated according to the pipe length and the configuration of indoor units.

④ The data above shall be based on the nameplate.

4.2 Product Data of Indoor Unit

4.2.1 Duct Type

Model			GMV(L)-R22P/Na-K	GMV(L)-R25P/Na-K	GMV(L)-R28P/Na-K
Cooling Capacity		kW	2.2	2.5	2.8
		Btu	7506	8530	9554
Heating Capacity		kW	2.5	3.0	3.2
		Btu	8530	10236	10918
Air Flow Rate		m3/h	450	450	570
		CFM	265	265	336
Sound Pressure Level (H/L)		dB(A)	37/33	37/33	39/35
External Static Pressure		Pa	25	25	25
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.02	0.02	0.02
	Running Current	A	0.17	0.17	0.16
Connecting Pipes	Gas Pipe	mm	φ9.52	φ9.52	φ9.52
		inch	φ3/8 "	φ3/8 "	φ3/8 "
	Liquid Pipe	mm	φ6.35	φ6.35	φ6.35
		inch	φ1/4 "	φ1/4 "	φ1/4 "
	Connection Method		Flare Connection	Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	φ20×1.5	φ20×1.5	φ20×1.5
Unit Dimensions(W×D×H)		mm	875×680×220	875×680×220	875×680×220
Package Dimensions (W×D×H)		mm	1012×708×275	1012×708×275	1012×708×275
Weight（Net/Gross）		kg	27/31	27/31	27/31

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

Model			GMV(L)-R32P/Na-K	GMV(L)-R36P/Na-K	GMV(L)-R40P/Na-K
Cooling Capacity		kW	3.2	3.6	4.0
		Btu	10919	12284	13649
Heating Capacity		kW	3.6	4.0	4.5
		Btu	12283	13648	15354
Air Flow Rate		m3/h	570	570	840
		CFM	336	336	494
Sound Pressure Level (H/L)		dB(A)	39/35	39/35	40/36
External Static Pressure		Pa	25	25	20
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.02	0.02	0.07
	Running Current	A	0.16	0.16	0.69
Connecting Pipes	Gas Pipe	mm	φ12.7	φ12.7	φ12.7
		inch	φ1/2 "	φ1/2 "	φ1/2 "
	Liquid Pipe	mm	φ6.35	φ6.35	φ6.35
		inch	φ1/4 "	φ1/4 "	φ1/4 "
	Connection Method		Flare Connection	Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	φ20×1.5	φ20×1.5	φ30×1.5
Unit Dimensions(W×D×H)		mm	875×680×220	875×680×220	980×736×266
Package Dimensions (W×D×H)		mm	1012×708×275	1012×708×275	1068×766×320
Weight（Net/Gross）		kg	27/31	27/31	36/39

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

Model			GMV(L)-R45P/Na-K	GMV(L)-R50P/Na-K	GMV(L)-R56P/Na-K
Cooling Capacity		kW	4.5	5.0	5.6
		Btu	15355	17061	19108
Heating Capacity		kW	5.0	5.8	6.3
		Btu	17060	19790	21496
Air Flow Rate		m3/h	840	840	1400
		CFM	494	494	824
Sound Pressure Level (H/L)		dB(A)	40/36	40/36	42/38
External Static Pressure		Pa	40	40	100
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.07	0.07	0.15
	Running Current	A	0.69	0.69	1.32
Connecting Pipes	Gas Pipe	mm	φ12.7	φ12.7	φ15.9
		inch	φ1/2 "	φ1/2 "	φ5/8 "
	Liquid Pipe	mm	φ6.35	φ6.35	φ9.52
		inch	φ1/4 "	φ1/4 "	φ3/8 "
	Connection Method		Flare Connection	Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	φ30×1.5	φ30×1.5	φ30×1.5
Unit Dimensions(W×D×H)		mm	980×736×266	980×736×266	1112×756×300
Package Dimensions (W×D×H)		mm	1068×766×320	1068×766×320	1245×785×360
Weight（Net/Gross）		kg	36/39	36/39	55/59

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

Model			GMV(L)-R63P/Na-K	GMV(L)-R71P/Na-K	GMV(L)-R80P/Na-K
Cooling Capacity		kW	6.3	7.1	8.0
		Btu	21496	24226	27297
Heating Capacity		kW	7.0	8.0	8.8
		Btu	23884	27296	30026
Air Flow Rate		m3/h	1400	1400	1400
		CFM	824	824	824
Sound Pressure Level (H/L)		dB(A)	42/38	42/38	42/38
External Static Pressure		Pa	100	100	100
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.15	0.15	0.15
	Running Current	A	1.32	1.32	1.32
Connecting Pipes	Gas Pipe	mm	φ15.9	φ15.9	φ15.9
		inch	φ5/8 "	φ5/8 "	φ5/8 "
	Liquid Pipe	mm	φ9.52	φ9.52	φ9.52
		inch	φ3/8 "	φ3/8 "	φ3/8 "
	Connection Method		Flare Connection	Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	φ30×1.5	φ30×1.5	φ30×1.5
Unit Dimensions(W×D×H)		mm	1112×756×300	1112×756×300	1112×756×300
Package Dimensions (W×D×H)		mm	1245×785×360	1245×785×360	1245×785×360
Weight（Net/Gross）		kg	55/59	55/59	55/59

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

Model			GMV(L)-R90P/Na-K	GMV(L)-R100P/Na-K	GMV(L)-R112P/Na-K
Cooling Capacity		kW	9.0	10.0	11.2
		Btu	30709	34121	38216
Heating Capacity		kW	10.0	11.0	12.5
		Btu	34120	37532	42650
Air Flow Rate		m3/h	2000	2000	2000
		CFM	1177	1177	1177
Sound Pressure Level (H/L)		dB(A)	44/40	44/40	44/40
External Static Pressure		Pa	100	100	100
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.225	0.225	0.225
	Running Current	A	2.14	2.14	2.14
Connecting Pipes	Gas Pipe	mm	φ15.9	φ15.9	φ15.9
		inch	φ5/8 "	φ5/8 "	φ5/8 "
	Liquid Pipe	mm	φ9.52	φ9.52	φ9.52
		inch	φ3/8 "	φ3/8 "	φ3/8 "
	Connection Method		Flare Connection	Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	φ30×1.5	φ30×1.5	φ30×1.5
Unit Dimensions(W×D×H)		mm	1385×736×300	1385×736×300	1385×736×300
Package Dimensions (W×D×H)		mm	1514×795×360	1514×795×360	1514×795×360
Weight（Net/Gross）		kg	75/79	75/79	75/79

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

Model			GMV(L)-R125P/Na-K	GMV(L)-R140P/Na-K
Cooling Capacity		kW	12.5	14.0
		Btu	42652	47770
Heating Capacity		kW	13.5	15.0
		Btu	46060	51180
Air Flow Rate		m3/h	2000	2000
		CFM	1177	1177
Sound Pressure Level (H/L)		dB(A)	44/40	45/41
External Static Pressure		Pa	100	50
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.225	0.225
	Running Current	A	2.14	2.14
Connecting Pipes	Gas Pipe	mm	φ15.9	φ15.9
		inch	φ5/8 "	φ5/8 "
	Liquid Pipe	mm	φ9.52	φ9.52
		inch	φ3/8 "	φ3/8 "
	Connection Method		Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	φ30×1.5	φ30×1.5
Unit Dimensions(W×D×H)		mm	1385×736×300	1385×736×300
Package Dimensions (W×D×H)		mm	1514×795×360	1514×795×360
Weight（Net/Gross）		kg	75/79	75/79

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation

Model			GMV(L)-R22P/NaB-K	GMV(L)-R28P/NaB-K	GMV(L)-R36P/NaB-K
Cooling Capacity		kW	2.2	2.8	3.6
		Btu	7507	9554	12284
Heating Capacity		kW	2.5	3.2	4.0
		Btu	8530	10918	13648
Air Flow Rate		m3/h	450	570	570
		CFM	265	335	335
Sound Pressure Level (H/L)		dB(A)	37/33	39/35	39/35
External Static Pressure		Pa	50/20	50/20	50/20
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.04	0.06	0.06
	Running Current	A	0. 28	0.41	0.41
Connecting Pipes	Gas Pipe	mm	φ9.52	φ9.52	φ12.7
		inch	φ3/8 "	φ3/8 "	φ1/2 "
	Liquid Pipe	mm	φ6.35	φ6.35	φ6.35
		inch	φ1/4 "	φ1/4 "	φ1/4 "
	Connection Method		Flare Connection	Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	φ20×1.5	φ20×1.5	φ20×1.5
Unit Dimensions(W×D×H)		mm	880×655×250	880×655×250	880×655×250
Package Dimensions (W×D×H)		mm	1020×745×305	1020×745×305	1020×745×305
Weight（Net/Gross）		kg	27/31	28.5/33.5	28.5/33.5

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

Model			GMV(L)-R45P/NaB-K	GMV(L)-R56P/NaB-K	GMV(L)-R71P/NaB-K
Cooling Capacity		kW	4.5	5.6	7.1
		Btu	15355	19108	24226
Heating Capacity		kW	5.0	6.3	8.0
		Btu	17060	21496	27296
Air Flow Rate		m3/h	700	1000	1100
		CFM	412	589	647
Sound Pressure Level (H/L)		dB(A)	40/36	44/40	45/41
External Static Pressure		Pa	50/20	60/30	60/30
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.07	0.15	0.15
	Running Current	A	0.55	1.3	1.3
Connecting Pipes	Gas Pipe	mm	φ12.7	Φ15.9	Φ15.9
		inch	1/2 "	5/8 "	5/8 "
	Liquid Pipe	mm	φ6.35	Φ9.52	Φ9.52
		inch	1/4 "	3/8 "	3/8 "
	Connection Method		Flare Connection	Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	Φ30×1.5	Φ30×1.5	Φ30×1.5
Unit Dimensions (W×D×H)		mm	980×721×266	1155×756×300	1155×756×300
Package Dimensions (W×D×H)		mm	1068×766×320	1245×785×360	1245×785×360
Weight（Net/Gross）		kg	34/37	49/56	49/56

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

Model			GMV(L)-R90P/NaB-K	GMV(L)-R112P/NaB-K	GMV(L)-R140P/NaB-K
Cooling Capacity		kW	9.0	11.2	14.0
		Btu	30709	38216	47770
Heating Capacity		kW	10.0	12.5	15.0
		Btu	34120	42650	51180
Air Flow Rate		m3/h	1700	1700	2000
		CFM	1001	1001	1177
Sound Pressure Level (H/L)		dB(A)	48/44	48/44	50/46
External Static Pressure		Pa	80/40	80/40	100/50
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.225	0.225	0.26
	Running Current	A	2.15	2.15	2.67
Connecting Pipes	Gas Pipe	mm	Φ15.9	Φ15.9	Φ15.9
		inch	5/8 "	5/8 "	5/8 "
	Liquid Pipe	mm	Φ9.52	Φ9.52	Φ9.52
		inch	3/8 "	3/8 "	3/8 "
	Connection Method		Flare Connection	Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	Φ30×1.5	Φ30×1.5	Φ30×1.5
Unit Dimensions (W×D×H)		mm	1425×736×300	1425×736×300	1425×736×300
Package Dimensions (W×D×H)		mm	1514×785×360	1514×785×360	1514×785×360
Weight（Net/Gross）		kg	62/71	62/71	63.5/73

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

Model			GMV(L)-R22PS/NaB-K	GMV(L)-R28PS/NaB-K	GMV(L)-R36PS/NaB-K
Cooling Capacity		kW	2.2	2.8	3.6
		Btu	7507	9554	12284
Heating Capacity		kW	2.5	3.2	4.0
		Btu	8530	10918	13648
Air Flow Rate		m3/h	450	570	570
		CFM	265	335	335
Sound Pressure Level (H/L)		dB(A)	37/33	39/35	39/35
External Static Pressure		Pa	50/20	50/20	50/20
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.04	0.06	0.06
	Running Current	A	0.28	0.41	0.41
Connecting Pipes	Gas Pipe	mm	φ9.52	φ9.52	φ12.7
		inch	φ3/8 "	φ3/8 "	φ1/2 "
	Liquid Pipe	mm	φ6.35	φ6.35	φ6.35
		inch	φ1/4 "	φ1/4 "	φ1/4 "
	Connection Method		Flare Connection	Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	φ20×1.5	φ20×1.5	φ20×1.5
Unit Dimensions(W×D×H)		mm	1425×736×300	1425×736×300	1425×736×300
Package Dimensions (W×D×H)		mm	1514×785×360	1514×785×360	1514×785×360
Weight（Net/Gross）		kg	28.5/33.5	30.5/35.5	30.5/35.5

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

Model			GMV(L)-R45PS/NaB-K	GMV(L)-R56PS/NaB-K	GMV(L)-R71PS/NaB-K
Cooling Capacity		kW	4.5	5.6	7.1
		Btu	15355	19108	24226
Heating Capacity		kW	5.0	6.3	8.0
		Btu	17060	21496	27296
Air Flow Rate		m3/h	700	1000	1100
		CFM	412	589	647
Sound Pressure Level (H/L)		dB(A)	40/36	44/40	45/41
External Static Pressure		Pa	50/20	60/30	60/30
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.07	0.15	0.15
	Running Current	A	0.55	1.3	1.3
Connecting Pipes	Gas Pipe	mm	φ12.7	Φ15.9	Φ15.9
		inch	1/2 "	5/8 "	5/8 "
	Liquid Pipe	mm	φ6.35	Φ9.52	Φ9.52
		inch	1/4 "	3/8 "	3/8 "
	Connection Method		Flare Connection	Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	Φ30×1.5	Φ30×1.5	Φ30×1.5
Unit Dimensions (W×D×H)		mm	980×721×266	1155×756×300	1155×756×300
Package Dimensions (W×D×H)		mm	1068×766×320	1245×785×360	1245×785×360
Weight（Net/Gross）		kg	36/39	51/58	51/58

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

Model			GMV(L)-R90PS/NaB-K	GMV(L)-R112PS/NaB-K	GMV(L)-R140PS/NaB-K
Cooling Capacity		kW	9.0	11.2	14.0
		Btu	30709	38216	47770
Heating Capacity		kW	10.0	12.5	15.0
		Btu	34120	42650	51180
Air Flow Rate		m3/h	1700	1700	2000
		CFM	1001	1001	1177
Sound Pressure Level (H/L)		dB(A)	48/44	48/44	50/46
External Static Pressure		Pa	80/40	80/40	100/50
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.225	0.225	0.26
	Running Current	A	2.15	2.15	2.67
Connecting Pipes	Gas Pipe	mm	Φ15.9	Φ15.9	Φ15.9
		inch	5/8 "	5/8 "	5/8 "
	Liquid Pipe	mm	Φ9.52	Φ9.52	Φ9.52
		inch	3/8 "	3/8 "	3/8 "
	Connection Method		Flare Connection	Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	Φ30×1.5	Φ30×1.5	Φ30×1.5
Unit Dimensions (W×D×H)		mm	1425×736×300	1425×736×300	1425×736×300
Package Dimensions (W×D×H)		mm	1514×785×360	1514×785×360	1514×785×360
Weight（Net/Gross）		kg	64/73	64/73	65.5/75

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

4.2.2Cassete Type

Model			GMV (L)-R22T/NaA-K	GMV(L)-R28T/NaA-K	GMV(L)-R36T/NaA-K	GMV(L)-R45T/NaA-K
Cooling Capacity		kW	2.2	2.8	3.6	4.5
		Btu	7506	9554	12283	15354
Heating Capacity		kW	2.5	3.2	4.0	5.0
		Btu	8530	10918	13648	17060
Air Flow Rate		m3/h	600	600	600	600
		CFM	353	353	353	353
Sound Pressure Level (H/L)		dB(A)	47/41	47/41	47/41	47/41
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz	220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.011	0.011	0.011	0.011
	Running Current	A	0.05	0.05	0.05	0.05
Connecting Pipes	Gas Pipe	mm	Φ9.52		Φ12.7	
		inch	3/8 "		1/2 "	
	Liquid Pipe	mm	Φ6.35		Φ6.35	
		inch	1/4 "		1/4 "	
	Connection Method		Flare Connection		Flare Connection	
Drain Pipes (External Dia. × Thickness)		mm	Φ30×1.5			
Unit Dimensions (W×D×H)		mm	Main body：570×570×230 Panel：650×650×50			
Package Dimensions (W×D×H)		mm	Main body：848×728×310 Panel：730×670×102			
Weight(Net/ Gross) (Main body/Panel)		kg	25/37			

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units dose not have any parameters of performing heating;

③ The sound level was tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

Model			GMV(L)-R28T/Na-K	GMV(L)-R36T/Na-K	GMV(L)-R45T/Na-K
Cooling Capacity		kW	2.8	3.6	4.5
		Btu	9550	12280	15360
Heating Capacity		kW	3.2	4.0	5.0
		Btu	10900	13650	17060
Air Flow Rate		m3/h	680	680	680
		CFM	400	400	400
Sound Pressure Level (H/L)		dB(A)	37/34	37/34	37/34
External Static Pressure		Pa	/	/	/
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.035	0.035	0.035
	Running Current	A	0.19	0.19	0.28
Connecting Pipes	Gas Pipe	mm	Φ9.52	Φ12.7	Φ12.7
		inch	Φ3/8	Φ1/2	Φ1/2
	Liquid Pipe	mm	Φ6.35	Φ6.35	Φ6.35
		inch	Φ1/4	Φ1/4	Φ1/4
	Connection Method		Flare Connection	Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	Φ30×1.5	Φ30×1.5	Φ30×1.5
Unit Dimensions (W×D×H)		mm	Main body：840×840×190 Panel：950×950×60		
Package Dimensions (W×D×H)		mm	Main body：960×960×257 Panel：1040×1025×115		
Net Weight (Main body/Panel)		kg	25/6.5		
Gross Weight (Main body/Panel)		kg	33/10		

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

Model			GMV(L)-R50T/Na-K	GMV(L)-R56T/Na-K	GMV(L)-R71T/Na-K
Cooling Capacity		kW	5.0	5.6	7.1
		Btu	17060	19100	24230
Heating Capacity		kW	5.8	6.3	8.0
		Btu	19790	21500	27300
Air Flow Rate		m3/h	680	1180	1180
		CFM	400	695	695
Sound Pressure Level (H/L)		dB(A)	37/34	39/35	39/35
External Static Pressure		Pa	/	/	/
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.035	0.035	0.035
	Running Current	A	0.28	0.28	0.28
Connecting Pipes	Gas Pipe	mm	Φ12.7	Φ15.9	Φ15.9
		inch	Φ1/2	Φ5/8	Φ5/8
	Liquid Pipe	mm	Φ6.35	Φ9.52	Φ9.52
		inch	Φ1/4	Φ3/8	Φ3/8
	Connection Method		Flare Connection	Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	Φ30×1.5	Φ30×1.5	Φ30×1.5
Unit Dimensions(W×D×H)		mm	Main body：840×840×190 Panel：950×950×60	Main body：840×840×240 Panel：950×950×60	
Package Dimensions (W×D×H)		mm	Main body：960×960×257 Panel：1040×1025×115	Main body：960×960×310 Panel：1040×1025×115	
Net Weight (Main body/Panel)		kg	25/6.5	30/6.5	
Gross Weight (Main body/Panel)		kg	33/10	38/10	

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

Model			GMV(L)-R80T/Na-K	GMV(L)-R90T/Na-K
Cooling Capacity		kW	8.0	9.0
		Btu	27300	30700
Heating Capacity		kW	8.8	10.0
		Btu	30030	34120
Air Flow Rate		m3/h	1180	1860
		CFM	695	1095
Sound Pressure Level (H/L)		dB(A)	39/35	40/36
External Static Pressure		Pa	/	/
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.035	0.06
	Running Current	A	0.37	0.59
Connecting Pipes	Gas Pipe	mm	Φ15.9	Φ15.9
		inch	5/8 "	5/8 "
	Liquid Pipe	mm	Φ9.52	Φ9.52
		inch	3/8 "	3/8 "
	Connection Method		Flare Connection	Flare Connection
Drain Pipes (External Dia. × Thickness)		mm	Φ30×1.5	Φ30×1.5
Unit Dimensions (W×D×H)		mm	Main body：840×840×240 Panel：950×950×60	Main body：840×840×320 Panel：950×950×60
Package Dimensions (W×D×H)		mm	Main body：960×960×310 Panel：1040×1025×115	Main body：960×960×394 Panel：1040×1025×115
Net Weight (Main body/Panel)		kg	30/6.5	38/6.5
Gross Weight (Main body/Panel)		kg	38/10	46/10

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation

Model			GMV(L)-R100T/Na-K	GMV(L)-R112T/Na-K
Cooling Capacity		kW	10.0	11.2
		Btu	34120	38210
Heating Capacity		kW	11.0	12.5
		Btu	37540	42650
Air Flow Rate		m3/h	1860	1860
		CFM	1095	1095
Sound Pressure Level (H/L)		dB(A)	40/36	40/36
External Static Pressure		Pa	/	/
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.06	0.06
	Running Current	A	0.59	0.59
Connecting Pipes	Gas Pipe	mm	Φ15.9	Φ15.9
		inch	5/8 "	5/8 "
	Liquid Pipe	mm	Φ9.52	Φ9.52
		inch	3/8 "	3/8 "
	Connection Method		Flare Connection	Flare Connection
Drain Pipes (External Dia. × Thickness)		mm	Φ30×1.5	Φ30×1.5
Unit Dimensions (W×D×H)		mm	Main body：840×840×320 Panel：950×950×60	
Package Dimensions (W×D×H)		mm	Main body：960×960×394 Panel：1040×1025×115	
Net Weight (Main body/Panel)		kg	38/6.5	
Gross Weight (Main body/Panel)		kg	46/10	

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

Model			GMV(L)-R125T/Na-K	GMV(L)-R140T/Na-K
Cooling Capacity		kW	12.5	14.0
		Btu	42650	47770
Heating Capacity		kW	13.5	14.5
		Btu	46062	49470
Air Flow Rate		m3/h	1860	1860
		CFM	1095	1095
Sound Pressure Level (H/L)		dB(A)	40/36	40/36
External Static Pressure		Pa	/	/
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.06	0.06
	Running Current	A	0.59	0.59
Connecting Pipes	Gas Pipe	mm	Φ15.9	Φ15.9
		inch	5/8 "	5/8 "
	Liquid Pipe	mm	Φ9.52	Φ9.52
		inch	3/8 "	3/8 "
	Connection Method		Flare Connection	Flare Connection
Drain Pipes (External Dia. × Thickness)		mm	Φ30×1.5	Φ30×1.5
Unit Dimensions (W×D×H)		mm	Main body：840×840×320 Panel：950×950×60	
Package Dimensions (W×D×H)		mm	Main body：960×960×394 Panel：1040×1025×115	
Net Weight (Main body/Panel)		kg	38/6.5	
Gross Weight (Main body/Panel)		kg	46/10	

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

Model			GMV(L)-R22Td/Na-K	GMV(L)-R28Td/Na-K	GMV(L)-R36Td/Na-K
Cooling Capacity		kW	2.2	2.8	3.6
		Btu	7506	9550	12280
Heating Capacity		kW	2.5	3.2	4.0
		Btu	8530	10900	13650
Air Flow Rate		m3/h	450	500	500
		CFM	265	294	294
Sound Pressure Level (H/L)		dB(A)	45/41	45/41	45/41
External Static Pressure		Pa	/	/	/
Power Supply			220-240V～50Hz	220-240V～50Hz	220-240V～50Hz
Fan Motor	Output	kW	0.02	0.02	0.02
	Running Current	A	0.22	0.22	0.22
Connecting Pipes	Gas Pipe	mm	Φ9.52	Φ9.52	Φ12.7
		inch	3/8 "	3/8 "	1/2 "
	Liquid Pipe	mm	Φ6.35	Φ6.35	Φ6.35
		inch	1/4 "	1/4 "	1/4 "
	Connection Method		Flare Connection	Flare Connection	Flare Connection
Drain Pipes (External Dia. × Thickness)		mm	Φ30×1.5	Φ30×1.5	Φ30×1.5
Unit Dimensions (W×D×H)		mm	Main body：920×360×185 Panel：1180×430×30		
Package Dimensions (W×D×H)		mm	Main body：1290×465×270 Panel：1260×505×110		
Net Weight (Main body/Panel)		kg	16/3		
Gross Weight (Main body/Panel)		kg	25/5		

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units dose not have any parameters of performing heating;

③ The sound level was tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation

4.2.3Wall mounted Type

Model			GMV(L)-R22G/NaB-K	GMV(L)-R28G/NaB-K	GMV(L)-R36G/NaB-K
Cooling Capacity		kW	2.2	2.8	3.6
		Btu	7507	9554	12284
Heating Capacity		kW	2.5	3.2	4.0
		Btu	8530	10919	13649
Air Flow Rate		m3/h	360	360	500
		CFM	212	212	294
Sound Pressure Level (H/L)		dB(A)	37/28	37/28	43/28
External Static Pressure		Pa	/	/	/
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.014	0.014	0.022
	Running Current	A	0.15	0.15	0.22
Connecting Pipes	Gas Pipe	mm	Φ9.52	Φ9.52	Φ12.7
		inch	Φ3/8	Φ3/8	Φ1/2
	Liquid Pipe	mm	Φ6.35	Φ6.35	Φ6.35
		inch	Φ1/4	Φ1/4	Φ1/4
	Connection Method		Flare Connection	Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	φ20×1.5	φ20×1.5	φ20×1.5
Unit Dimensions (W×D×H)		mm	830×189×285	830×189×285	830×189×285
Package Dimensions (W×D×H)		mm	995×394×268	995×394×268	995×394×268
Weight（Net/Gross）		kg	8/14.3	8/14.3	11/15.8

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

Model			GMV(L)-R45G/NaB-K	GMV(L)-R50G/NaB-K	GMV(L)-R56G/NaB-K
Cooling Capacity		kW	4.5	5.0	5.6
		Btu	15355	17061	19108
Heating Capacity		kW	5.0	5.8	6.3
		Btu	17061	19790	21496
Air Flow Rate		m3/h	500	700	750
		CFM	294	412	441
Sound Pressure Level (H/L)		dB(A)	43/28	45/40	45/40
External Static Pressure		Pa	/	/	/
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.022	0.02	0.02
	Running Current	A	0.22	0.25	0.26
Connecting Pipes	Gas Pipe	mm	Φ12.7	Φ12.7	Φ15.9
		inch	Φ1/2	Φ1/2	Φ5/8
	Liquid Pipe	mm	Φ6.35	Φ6.35	Φ9.52
		inch	Φ1/4	Φ1/4	Φ3/8
	Connection Method		Flare Connection	Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	Φ20×1.5	Φ30×1.5	Φ30×1.5
Unit Dimensions (W×D×H)		mm	830×189×285	1020×228×310	1020×228×310
Package Dimensions (W×D×H)		mm	1006×385×265	1178×325×390	1178×325×390
Weight（Net/Gross）		kg	11/15.8	15.5/20.5	15.5/20.5

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

Model			GMV(L)-R22G/NaC-K	GMV(L)-R28G/NaC-K	GMV(L)-R36G/NaC-K
Cooling Capacity		kW	2.2	2.8	3.6
		Btu	7507	9554	12284
Heating Capacity		kW	2.5	3.2	4.0
		Btu	8530	10919	13649
Air Flow Rate		m3/h	360	360	500
		CFM	212	212	294
Sound Pressure Level (H/L)		dB(A)	37/28	37/28	43/28
External Static Pressure		Pa	/	/	/
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.014	0.014	0.022
	Running Current	A	0.15	0.15	0.22
Connecting Pipes	Gas Pipe	mm	Φ9.52	Φ9.52	Φ12.7
		inch	3/8 "	3/8 "	1/2 "
	Liquid Pipe	mm	Φ6.35	Φ6.35	Φ6.35
		inch	1/4 "	1/4 "	1/4 "
	Connection Method		Flare Connection	Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	ф20×1.5	ф20×1.5	ф20×1.5
Unit Dimensions (W×D×H)		mm	770×190×250	770×190×250	830×189×285
Package Dimensions (W×D×H)		mm	955×330×272	955×272×330	1006×395×295
Weight（Net/Gross）		kg	8/14.3	8/14.3	11/15.8

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units dose not have any parameters of performing heating;

③ The sound level was tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

Model			GMV(L)-R45G/NaC-K	GMV(L)-R71G/Na-K	GMV(L)-R80G/Na-K
Cooling Capacity		kW	4.5	7.1	8.0
		Btu	15355	24226	27297
Heating Capacity		kW	5.0	8.0	9.0
		Btu	17061	27297	30709
Air Flow Rate		m3/h	500	1200	1200
		CFM	294	706	706
Sound Pressure Level (H/L)		dB(A)	43/28	49/42	49/42
External Static Pressure		Pa	/	/	/
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.022	0.026	0.026
	Running Current	A	0.22	0.29	0.39
Connecting Pipes	Gas Pipe	mm	Φ12.7	Φ15.9	Φ15.9
		inch	1/2 "	5/8 "	5/8 "
	Liquid Pipe	mm	Φ6.35	Φ9.52	Φ9.52
		inch	1/4 "	3/8 "	3/8 "
	Connection Method		Flare Connection	Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	Φ30×1.5	ф30×1.5	ф30×1.5
Unit Dimensions (W×D×H)		mm	830×189×285	1178×227×326	1178×227×326
Package Dimensions (W×D×H)		mm	1006×395×295	1365×417×333	1365×417×333
Weight（Net/Gross）		kg	11/15.8	17.5/23	17.5/23

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units dose not have any parameters of performing heating;

③ The sound level was tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

4.2.4Floor Ceiling Type

Model			GMV(L)-R28Zd/Na-K	GMV(L)-R36Zd/Na-K	GMV(L)-R50Zd/Na-K
Cooling Capacity		kW	2.8	3.6	5.0
		Btu	9554	12284	17061
Heating Capacity		kW	3.2	4.0	5.8
		Btu	10919	13649	19790
Air Flow Rate		m3/h	550	600	700
		CFM	324	353	412
Sound Pressure Level (H/L)		dB(A)	43/-	44/-	50/-
External Static Pressure		Pa	/	/	/
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.01	0.01	0.04
	Running Current	A	0.1	0.1	0.4
Connecting Pipes	Gas Pipe	mm	Φ9.52	Φ12.7	Φ12.7
		inch	Φ3/8	Φ1/2	Φ1/2
	Liquid Pipe	mm	Φ6.35	Φ6.35	Φ6.35
		inch	Φ1/4	Φ1/4	Φ1/4
	Connection Method		Flare Connection	Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	Φ17×1.75	Φ17×1.75	Φ17×1.75
Unit Dimensions (W×D×H)		mm	840×238×695	840×238×695	840×238×695
Package Dimensions (W×D×H)		mm	1035×295×805	1035×295×805	1035×295×805
Weight（Net/Gross）		kg	28/37	28/37	28/37

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

Model			GMV(L)-R71Zd/Na-K	GMV(L)-R90Zd/Na-K
Cooling Capacity		kW	7.1	9.0
		Btu	24226	30709
Heating Capacity		kW	8.0	10.0
		Btu	27297	34121
Air Flow Rate		m3/h	1170	2100
		CFM	689	1236
Sound Pressure Level (H/L)		dB(A)	48/-	51/-
External Static Pressure		Pa	/	/
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.1	0.15
	Running Current	A	1	1.5
Connecting Pipes	Gas Pipe	mm	Φ15.9	Φ15.9
		inch	Φ5/8	5/8
	Liquid Pipe	mm	Φ9.52	Φ9.52
		inch	Φ3/8	3/8
	Connection Method		Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	Φ17×1.75	Φ17×1.75
Unit Dimensions(W×D×H)		mm	1300×188×600	1590×238×695
Package Dimensions(W×D×H)		mm	1514×248×724	1714×330×830
Weight（Net/Gross）		kg	34/38	44/53

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

Model			GMV(L)-R112Zd/Na-K	GMV(L)-R125Zd/Na-K
Cooling Capacity		kW	11.2	12.5
		Btu	38216	42652
Heating Capacity		kW	12.5	13.5
		Btu	42652	46064
Air Flow Rate		m3/h	2200	2300
		CFM	1295	1354
Sound Pressure Level (H/L)		dB(A)	54/-	55/-
External Static Pressure		Pa	/	/
Power Supply			220-240V-1Ph-50Hz	220-240V-1Ph-50Hz
Fan Motor	Output	kW	0.18	0.18
	Running Current	A	1.8	1.8
Connecting Pipes	Gas Pipe	mm	Φ15.9	Φ15.9
		inch	5/8 "	5/8 "
	Liquid Pipe	mm	Φ9.52	Φ9.52
		inch	3/8 "	3/8 "
	Connection Method		Flare Connection	Flare Connection
Drain Pipes （External Dia. × Thickness）		mm	Φ17×1.75	Φ17×1.75
Unit Dimensions (W×D×H)		mm	1590×238×695	1590×238×695
Package Dimensions (W×D×H)		mm	1714×330×830	1714×330×830
Weight（Net/Gross）		kg	44/53	44/53

Notes:

① Refer to the product nameplate for parameters and specification of the unit;

② The model with GMVL code is cooling only unit; while the model with GMV code is heat pump unit; the cooling only units does not have any parameters of performing heating;

③ The sound level is tested under circumstance of semi-anechoic chamber; the value of noise could be a little higher in actual operation.

4.3 Operation Range

Model	Range of outdoor temperature℃(℉)
Cooling	10℃(50℉)～48℃(118.4℉)
Heating	-20℃(-4℉)～27℃(8℉)

4.4 Hydro-box

Model		RQD5GA-K	RQD8GA-K
Heat Exchange Capacity	kW	5	8
Power Supply	-	220V 50Hz	220V 50Hz
Water Pump	Input Power	80W	80W
	Water Flow	1 m^3/h	1 m^3/h
	Delivery Lift	6m	6m
Heat Exchanger	-	Tube in tube	Tube in tube
Water System Connection	Caliber of water-in/out pipe	3/4"in	3/4"in
	Screw Thread	G3/4	G3/4
Fluorin Systen Connection	Gas Pipe	Φ16mm	Φ16mm
	Liquid Pipe	Φ12.7mm	Φ12.7mm
Dimensions (mm) （H×W×D）		650×300×250	650×300×250

Model		RQD5GB-K	RQD8GB-K
Heat Exchange Capacity	kW	5	8
Power Supply	-	220V 50Hz	220V 50Hz
Water Pump	Input Power	80W	80W
	Water Flow	4.4GPM	4.4GPM
	Delivery Lift	6m	6m
Heat Exchanger	-	Tube in tube	Tube in tube
Water System Connection	Caliber of water-in/out pipe	3/4"in	3/4"in
	Screw Thread	G3/4	G3/4
Fluorin Systen Connection	Gas Pipe	Φ15.9mm	Φ15.9mm
	Liquid Pipe	Φ12.7mm	Φ12.7mm
Dimensions (mm) （H×W×D）		650×435×258	650×435×258

Model		RQ5GB-K	RQ8GB-K
Heat Exchange Capacity	kW	5	8
Power Supply	-	220V 50Hz	220V 50Hz
Water Pump	Input Power	80W	80W
	Water Flow	4.4GPM	4.4GPM
	Delivery Lift	6m	6m
Heat Exchanger	-	Tube in tube	Tube in tube
Water System Connection	Caliber of water-in/out pipe	3/4"in	3/4"in
	Screw Thread	G3/4	G3/4
Fluorin Systen Connection	Gas Pipe	Φ15.9mm	Φ15.9mm
	Liquid Pipe	Φ12.7mm	Φ12.7mm
Dimensions (mm) （H×W×D）		650×300×250	650×300×250

Model		RQ20LA-K	RQD20LA-M	RQ30LA-K	RQD30LA-M
Heat Exchange Capacity	kW	20	20	30	30
Power Supply	-	220V 50Hz	380V 50Hz	220V 50Hz	380V 50Hz
Water Pump	Input Power	370W	370W	370W	370W
	Water Flow	2.5m^3/h	2.5m^3/h	2.5m^3/h	2.5m^3/h
	Delivery Lift	15m	15m	15m	15m
Heat Exchanger	-	Tube in tube	Tube in tube	Tube in tube	Tube in tube
Water System Connection	Caliber of water-in/out pipe	3/4"in	3/4"in	3/4"in	3/4"in
	Screw Thread	G3/4	G3/4	G3/4	G3/4
Fluorin Systen Connection	Gas Pipe	Φ19.05mm	Φ19.05mm	Φ19.05mm	Φ19.05mm
	Liquid Pipe	Φ15.9mm	Φ15.9mm	Φ15.9mm	Φ15.9mm
Dimensions (mm) （H×W×D）		1050×410×905	1050×410×905	1050×410×905	1050×410×905

4.5 Water Tank

Model			SXD250LC-K	SXD300LC-K	SXD350LC-K	SXD400LC-K
Capacity		V	250	300	350	400
Max.Working Pressure		MPa	0.7	0.7	0.7	0.7
Inner pot	Material	-	SUS304L	SUS304L	SUS304L	SUS304L
	Thickness	mm	1.5	1.5	1.5	1.5
Insulating Layer	Material	-	Polyurethane	Polyurethane	Polyurethane	Polyurethane
	Thickness	mm	50	45	45	45
Outer Layer	Material	-	Cold Plate	Cold Plate	Cold Plate	Cold Plate
	Thickness	mm	0.8	0.8	0.8	0.8
Circulated Pipes	Caliber	mm	DN20	DN20	DN20	DN20
	Screw Thread	-	G3/4	G3/4	G3/4	G3/4
Cool Water-in Pipe	Caliber	mm	DN15	DN15	DN15	DN15
	Screw Thread	-	G1/2	G1/2	G1/2	G1/2
Hot Water-out Pipe	Caliber	mm	DN15	DN15	DN15	DN15
	Screw Thread	-	G1/2	G1/2	G1/2	G1/2
Dimension	Outer Diameter ×Height	mm	Φ540×1945	Φ620×1620	Φ620×1895	Φ620×2125
Net Weight/Gross Weight		kg	68/77	71/81	79/90	86/98
Pile Layer		-	3	3	3	3

Model			SXD200LCJ/A-K	SXD300LCJ/A-K	SXD350LCJ/A-K	SXD400LCJ/A-K
Capacity		V	200	300	350	400
Max.Working Pressure		MPa	0.7	0.7	0.7	0.7
Inner pot	Material	-	SUS304L	SUS304L	SUS304L	SUS304L
	Thickness	mm	1.5	1.5	1.5	1.5
Insulating Layer	Material	-	Polyurethane	Polyurethane	Polyurethane	Polyurethane
	Thickness	mm	50	45	45	45
Outer Layer	Material	-	Cold Plate	Cold Plate	Cold Plate	Cold Plate
	Thickness	mm	0.8	0.8	0.8	0.8
Circulated Pipes	Caliber	mm	DN20	DN20	DN20	DN20
	Screw Thread	-	G3/4	G3/4	G3/4	G3/4
Cool Water-in Pipe	Caliber	mm	DN15	DN15	DN15	DN15
	Screw Thread	-	G1/2	G1/2	G1/2	G1/2
Hot Water-out Pipe	Caliber	mm	DN15	DN15	DN15	DN15
	Screw Thread	-	G1/2	G1/2	G1/2	G1/2
Dimension	Outer Diameter ×Height	mm	Φ540×1595	Φ620×1620	Φ620×1895	Φ620×2125
Net Weight/Gross Weight		kg	68/80	84/94	92/103	99/111
Pile Layer		-	3	3	3	3

Model			SXD200LCJ2/A-K	SXD300LCJ2/A-K	SXD350LCJ2/A-K	SXD400LCJ2/A-K
Capacity		V	200	300	350	400
Max.Working Pressure		MPa	0.7	0.7	0.7	0.7
Inner pot	Material	-	SUS304L	SUS304L	SUS304L	SUS304L
	Thickness	mm	1.5	1.5	1.5	1.5
Insulating Layer	Material	-	Polyurethane	Polyurethane	Polyurethane	Polyurethane
	Thickness	mm	50	45	45	45
Outer Layer	Material	-	Cold Plate	Cold Plate	Cold Plate	Cold Plate
	Thickness	mm	0.8	0.8	0.8	0.8
Circulated Pipes	Caliber	mm	DN20	DN20	DN20	DN20
	Screw Thread	-	G3/4	G3/4	G3/4	G3/4
Cool Water-in Pipe	Caliber	mm	DN15	DN15	DN15	DN15
	Screw Thread	-	G1/2	G1/2	G1/2	G1/2
Hot Water-out Pipe	Caliber	mm	DN15	DN15	DN15	DN15
	Screw Thread	-	G1/2	G1/2	G1/2	G1/2
Dimension	Outer Diameter ×Height	mm	Φ540×1595	Φ620×1620	Φ620×1895	Φ620×2125
Net Weight/Gross Weight		kg	71/83	87/97	95/106	102/114
Pile Layer		-	3	3	3	3

4.6 Operating temperature range

Cooling working range	Outdoor temperature -5℃～48℃
Heating working range	Outdoor temperature -20℃～27℃
Cooling and water heating working range	Outdoor temperature -5℃～43℃
Heating and water heating working range	Outdoor temperature -15℃～24℃
Water heating working range	Outdoor temperature -15℃～43℃

5 CORRECTION FOR PRODUCT CAPACITY

5.1 Introduction to Capacity Correction

The actual capacity of VRF units is related to indoor and outdoor ambient temperatures, Length of connecting pipe between indoor unit and outdoor unit (distance of piping), as well as drop height between indoor and outdoor unit.Therefore, During the design and model selection, correct the nominal capacity of the unit according to the below methods.

5.2 Capacity Code

Capacity Code of Indoor Unit= Rated Cooling Capacity of Indoor Unit(W) ×0.01

Capacity Code of Outdoor Unit= Rated Cooling Capacity of Outdoor Unit(W) ×0.01

eg: GMV-Pds120W/Na-K: Rated cooling capacity of outdoor unit is 12000W and its capacity code is 120;

GMV-R25P/NaB-K: Rated cooling capacity of indoor unit is 2500W and its capacity code is 25.

5.3 Formula of Capacity Correction

Capacity of each Indoor Unit = Capacity of Outdoor Unti × Capacity of Indoor Unti/Total Capacity of Indoor Units which are running at the same time

Capacity of Outdoor Unit= Rated Capacity of Operating Mode of Outdoor Unit × Coefficient of Correction of Temp Conditions × (Coefficient of Correction of Piping Distance- Coefficient of Correction of Drop Height)

5.3.1 Rated Capacity of Operating Mode of Outdoor Unit

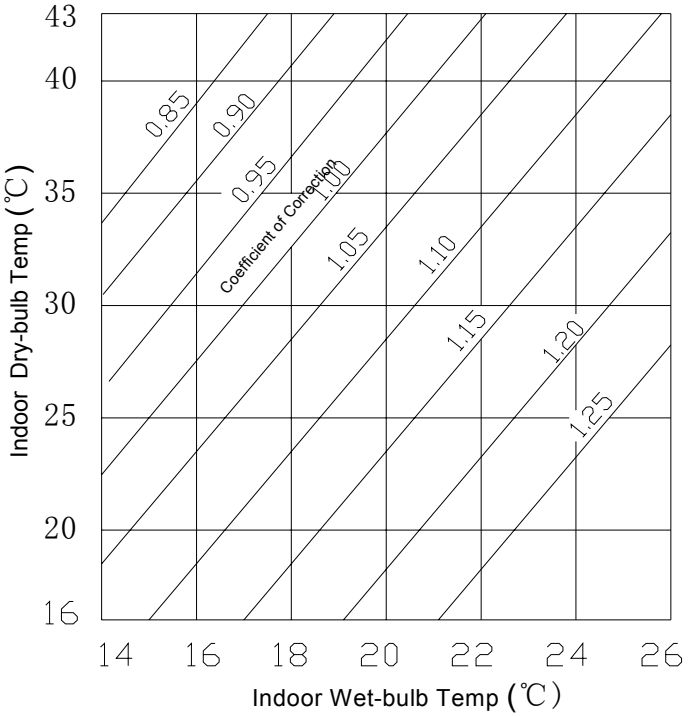
Total capacity of indoor units which are runnin at the same time determines rated capacity of operating mode of outdoor unit.

When the sum of capacity codes of indoor units is not more than the capacity code of outdoor unit, the sum is equal to the rated capacity of operating mode of outdoor unit.

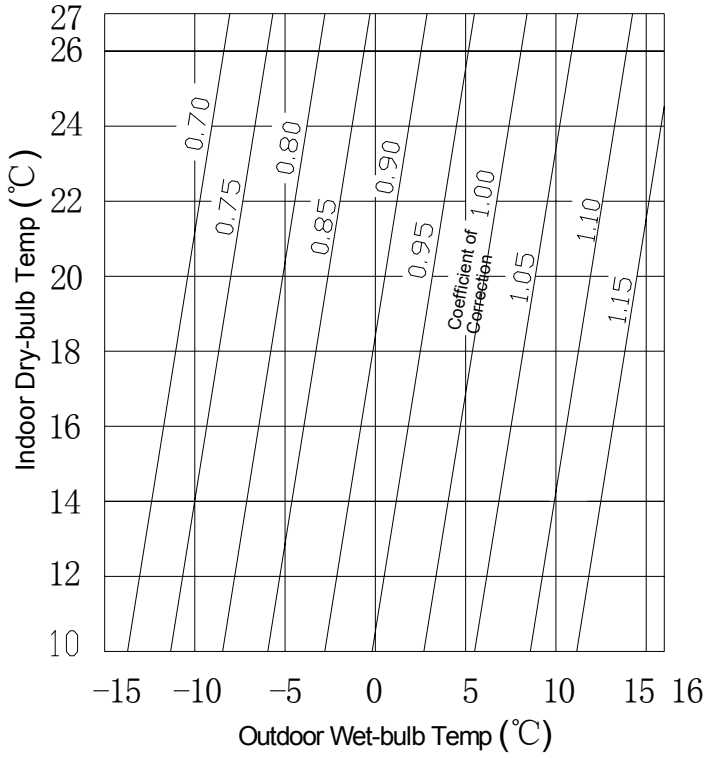
When the sum of capacity codes of indoor units is more than the capacity code of outdoor unit, the rated capacity of operating mode of outdoor unit is equal to its rated cooling capacity.

5.3.2 Coefficient of Correction of Indoor and Outdoor Temp Conditions

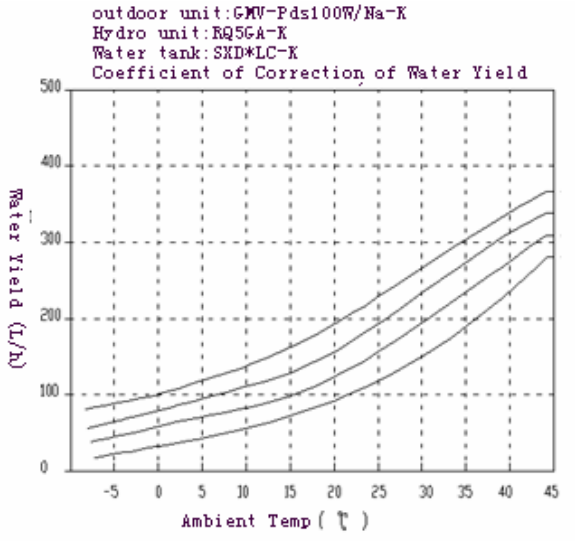
1）Coefficient of Correction of Cooling Capacity

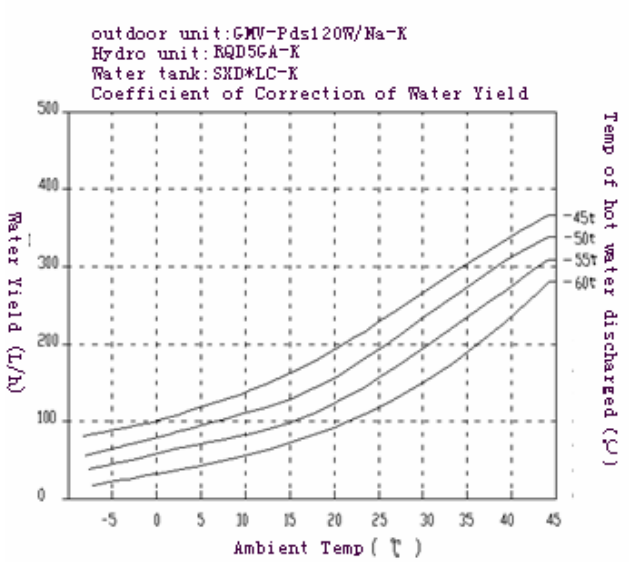


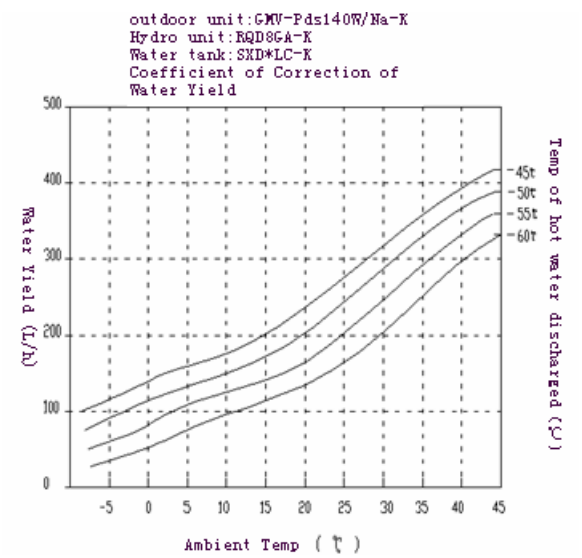
2）Coefficient of Correction of Heating Capacity

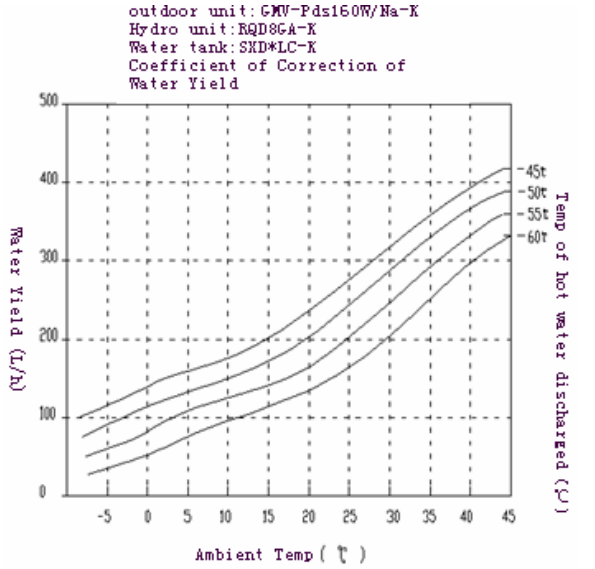


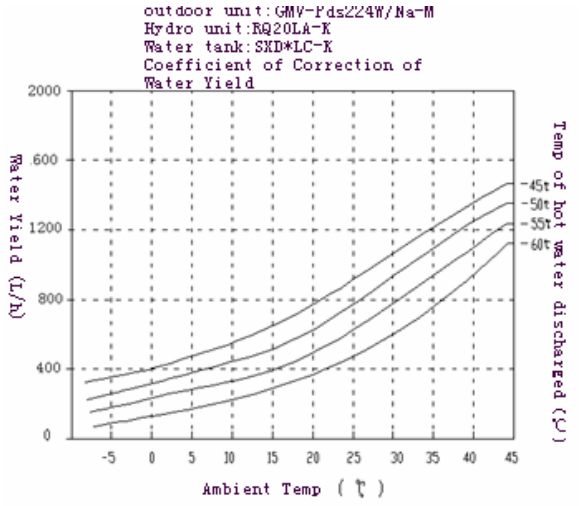
3）Coefficient of Correction of Water heating Capacity

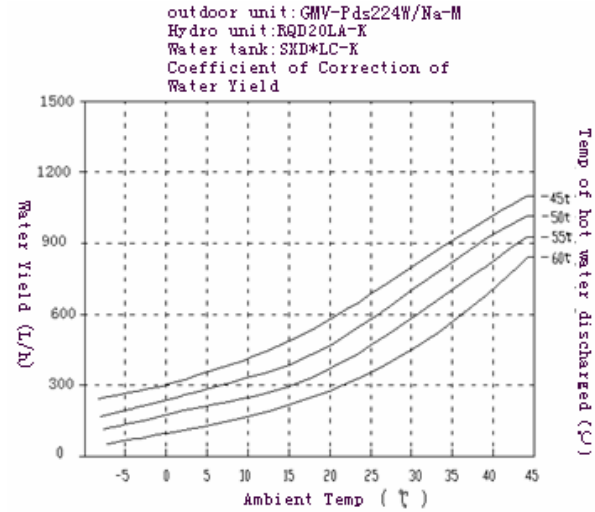


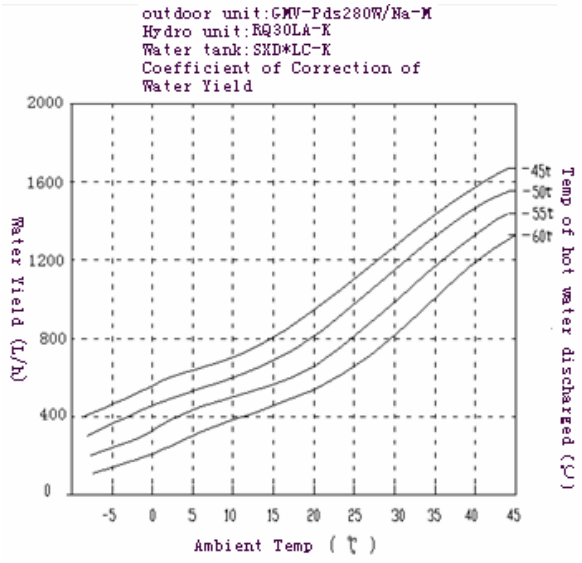


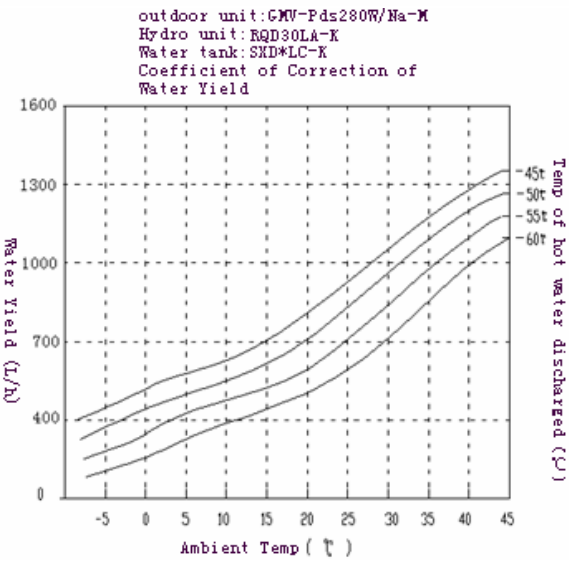












5.3.3 Coefficient of Correction of Distance of Piping and Drop Height between indoor and outdoor units （R410A model）

- Symbol Illumination

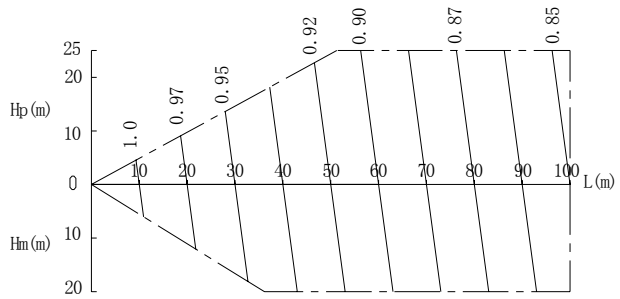
Hp： Drop Height （m）when the indoor unit is lower than outdoor unit (m);

Hm： when the indoor unit is higher than outdoor unit (m);

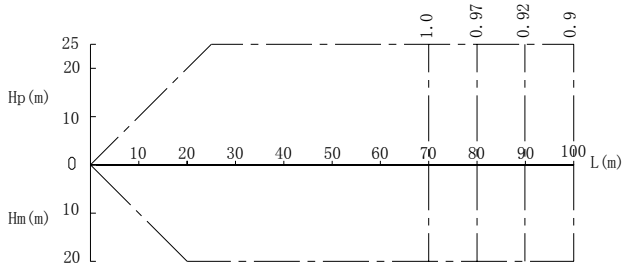
L： Length of Single-pass Equivalence Pipe

- The below diagrams illustrate change rate of capacity under standard operating mode (Cooling setting on thermostat is 16℃ and heating setting is 30℃)

（1）Change Rate of Cooling Capacity



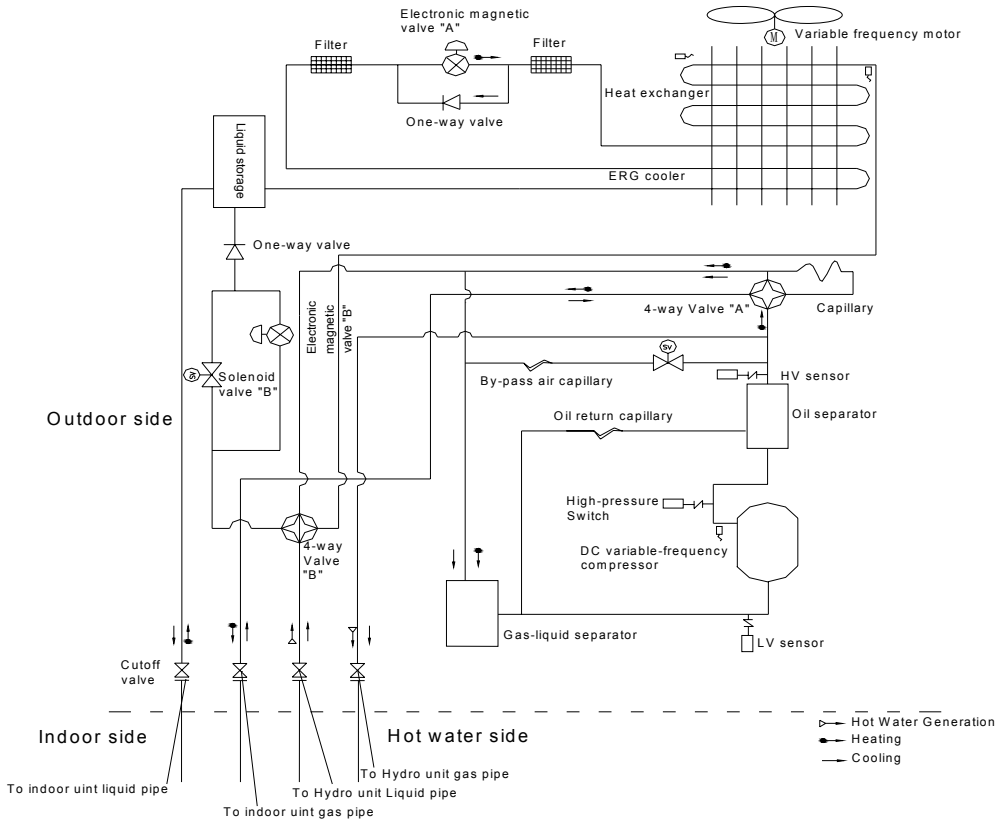
（2）Change Rate of Heating Capacity



If there is snow on outdoor heat exchanger or the outdoor temp is lower than 6℃ when heating, the frosting maybe occurs which will reduce the heating performance of the unit.

6 PRINCIPLE OF WORK

6.1 System Flowchart



6.2 Explanation of Flowchart

When connected to power, the indoor and outdoor units start to work. When working under cooling mode, the low-temperature and low-pressure refrigerant gas from the heat exchanger of each indoor unit will collect and be suctioned by compressor, where it will be compressed into high-temperature high-pressure gas. After that, the gas will enter into the outdoor heat exchanger, where it will exchange heats with the outdoor air and become refrigerant liquid. Via Y-type Branching pipe or Branching collection pipe, the liquid will flow into each indoor unit. The liquid will be decreased of the pressure and temperature by throttling element. After that, the liquid will enter into the indoor heat exchanger, where it will exchange heats with the air to be regulated in the room and thus become low-temperature low pressure refrigerant gas. The process is cycled repeatedly to achieve the purpose of cooling.

When working under heating mode, the 4-way valve AB will be activated, so that the refrigerant will circulate in reverse to the cooling process. The refrigerant gives out heats in indoor heat exchanger (Under specific conditions, the electric heating elements will start to work and give out heats). In the outdoor heat exchanger, the refrigerant will absorb heat to perform heat pump heating cycle, so as to achieve the purpose of heating.

When working under heating and hot water generation mode, the 4-way valve AB will be activated, so that the refrigerant will give out heats in indoor heat exchanger and hydro indoor unit, but absorbing heats in outdoor heat exchanger for heat pump heating and hot water generation cycle, thus to achieve the purpose of both heating and hot water generation.

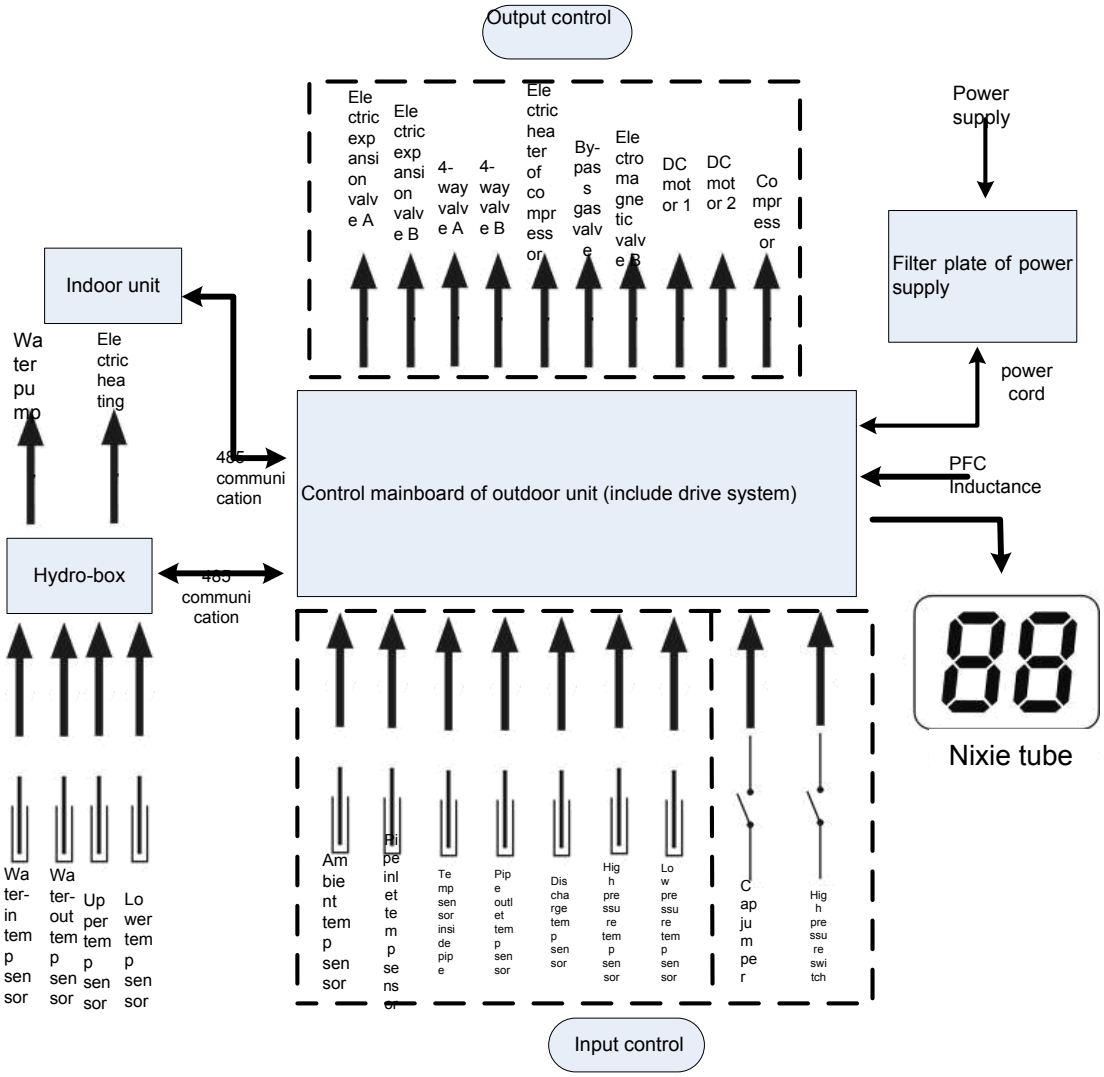
When working under hot water generation mode, the 4-way valve B will be activated, so that the refrigerant will give out heats in hydro indoor unit, but absorbing heats in outdoor heat exchanger for heat pump heating and hot water generation cycle, thus to achieve the purpose of hot water generation.

When working under cooling and hot water generation mode, the 4-way valve B will be activated as needed, in which case the refrigerant will give out heats in hydro indoor unit, but absorbing heats in indoor heat exchanger for cooling heating and hot water generation cycle. Under this mode, test may be done for complete recycling of the heats. But when the water temperature is very high, only a part of heats can be recycled. The system may identify according to reliable working range. In this way, the machine realizes the purpose of both cooling and hot water generation.

CONTROL

CONTROL
1 CONTROL OF THE UNIT
1.1 Integral Control of the Unit

1） Schematic Diagram of Control of the Units



The units consists of indoor unit,hydro-box and outdoor unit. One outdoor unit can maximum connect 16 sets indoor units and one hydro-box. They are connected with each other by communication wire with 2 pin (3-pin needle stand).The connections between indoor unit and display panel and between mainboard and hydro-box are by 4-pin communication wire. Address codes of display and mainboard of indoor unit should be set during engineering installation,which shall be the same for the same indoor unit.But the address codes of different units can't be the same. Mainboard of hydro-box and display panel don't need the address code. The indoor unit of VRF units are applicable to all digital and inverter outdoor units

Control device of the outdoor unit consists of two parts as viewed from function which are master control system and inverter-drive control system. They are in a same control panel.

2） Explanation of Schematic Diagram

Outdoor Unit System

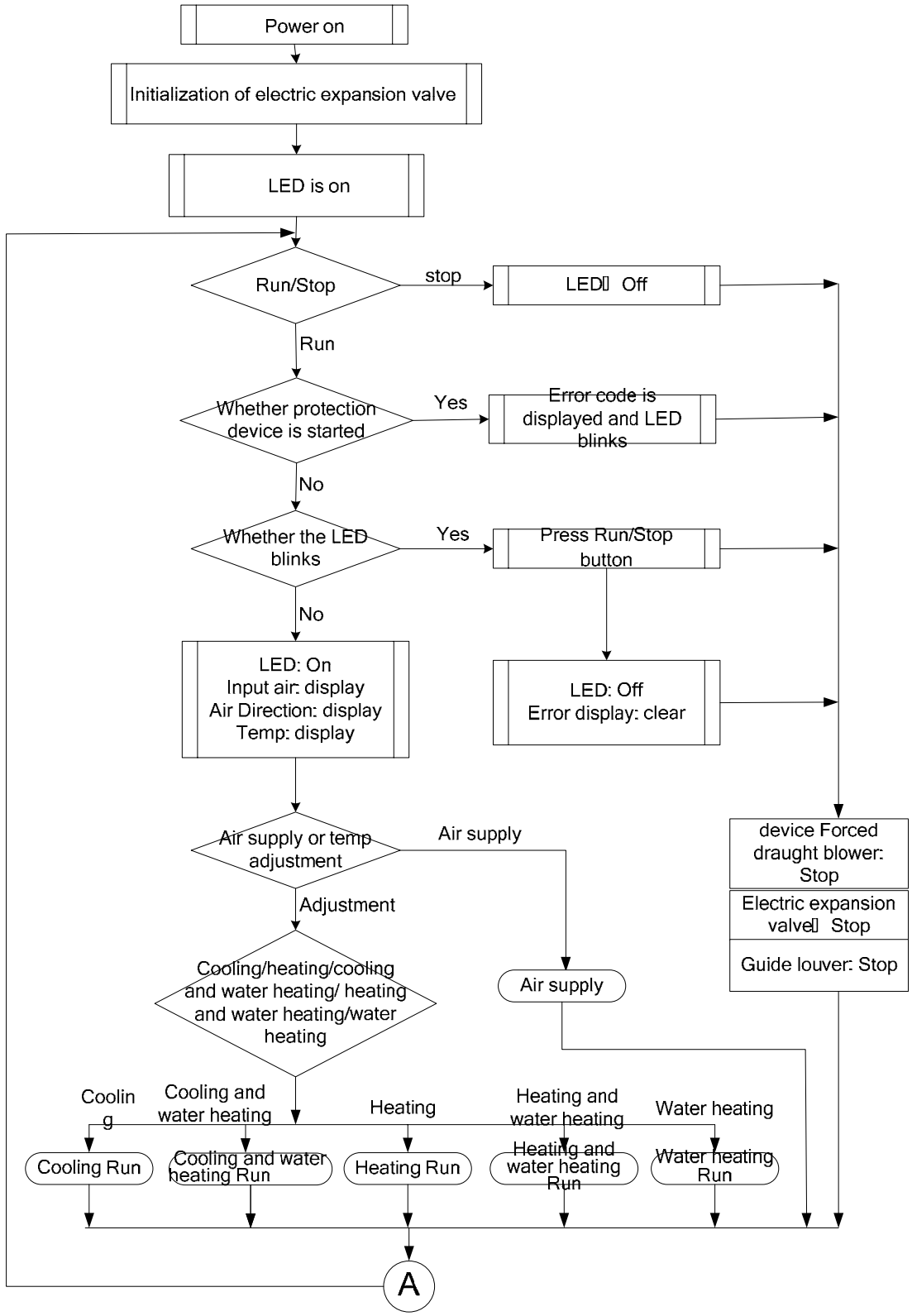
- Function: It connect with indoor unit or hydro-box to receive their ON/OFF command, mode, setting temp and ambient temp by 3-pin communication wire. It can determine its running mode and the proper running frequency which will be sent to drive-control system; It can adjust fan speed according to system pressure and monitor the temp of each temp sensor,running status and protection of the units in real time in order to make sure normal running of the whole system.If there is any malfunction that occurs, nixie display indicator on master control board will display the protection code which indicates specific type of malfunction. The code of malfunction of the drive is E5.
- High pressure switch is used for judging the high pressure of the system. When the pressure is too high, the high pressure switch will break and such signal will be received by mainboard and later be sent to control device. Then,the error code will be displayed on control device and the unit will stop.
- Cap jumper is used for distinguish the rated capacity of the unit and different cap jumpers mean different capacities of outdoor units.When control device detects that the value of cap jumper doesn't match the capacity of the unit, corresponding error will be displayed and the unit can't be started up.
- Ambient temp sensor is used for detecting ambient temp of outdoor unit,according to which, control device can calculate the capacity.
- Temp sensor of pipe inlet is used for detecting actual temp of pipe inlet of outdoor unit,according to which, control device can adjust steps of the corresponding electric expansion valve.
- Temp sensor in middle of the pipe is used for detecting actual temp in the middle of the pipe of outdoor unit,according to which, control device will judge if defrosting need to be executed.
- Temp sensor of pipe outlet is used for detecting actual temp of pipe outlet of outdoor unit,according to which, control device can adjust steps of the corresponding electric expansion valve.
- Discharge temp sensor is used for detecting the temp of discharged air,according which, control device can adjust the frequency of corresponding compressor.
- High pressure sensing device is used for detecting pressure of discharged air, according to which, the control device can judge the speed of fan, frequency of compressor and opening angle of electric expansion valve; When the pressure is too high, the units will enter high pressure protection,the control device will display the corresponding error and the units can't be started up.
- Low pressure sensing device is used for detecting pressure of outdoor unit, according to which, the control device can judge the speed of corresponding fan. When the pressure is too low, the units will enter low pressure protection,the control device will display the corresponding error and the units can't be started up.
- Based on the mode of the unit and the pressure,outgoing control of the fan judge and output corresponding speed.
- ON/OFF of 4-way valve is determined by the mode of the units.
- ON/OFF of electromagnetic valve is determined by the mode of the units.
- Based on the value of high pressure,temperautures of inlet and outlet of the pipe or discharge temp under different modes, electric expansion valve adjusts its opening angle.
- Based on the capacity calculated by outdoor unit, compressor outputs different frequencies to drive control which will output actual frequency of compressor.
- Filter plate: It filters power interference and protects the units under bad power environment; it restrains units from disturbing power supply and prevent the units from affecting the works of other electric appliances.Due to inverter units are sensitive to interference, the filter plates usually are equipped for current inverter units. The power supply of this units is single-phase so the filter plate is also the single-phase whose input terminals are

AC-L and N and the output terminals are L-OUT and N-OUT.

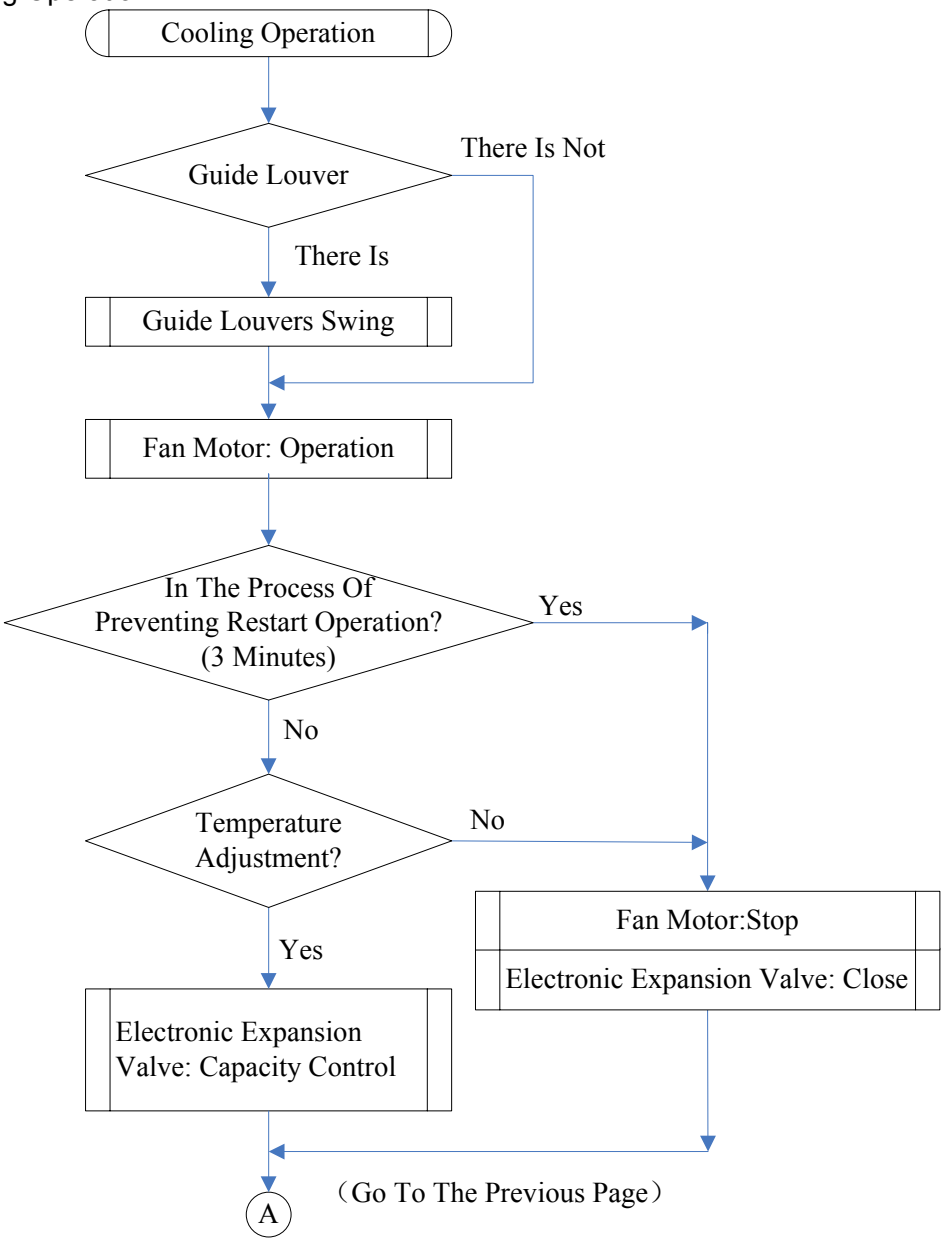
- Hydro-box:
- Temp sensor of feeding water is used for detecting the temp of feeding water of water tank,according to which, control device judges if the anti-freezing shall be executed.
- Temp sensor of discharged water is used for detecting the temp of discharged water of water tank,according to which, control device judges if the anti-freezing shall be executed.
- Upper temp sensor of the water is used for detecting temp of water tank which will be sent to the display.
- Lower temp sensor is used for detecting the temp of the water tank and judging if the temp point has been reached,water pump needs to be turned on,and electric heater is on or not.
- ON/OFF of the water pump is determined by temp of water tank.
- ON/OFF of the electric heater inside water tank is determined by temp of water tank.

1.2 Operation Flowchart

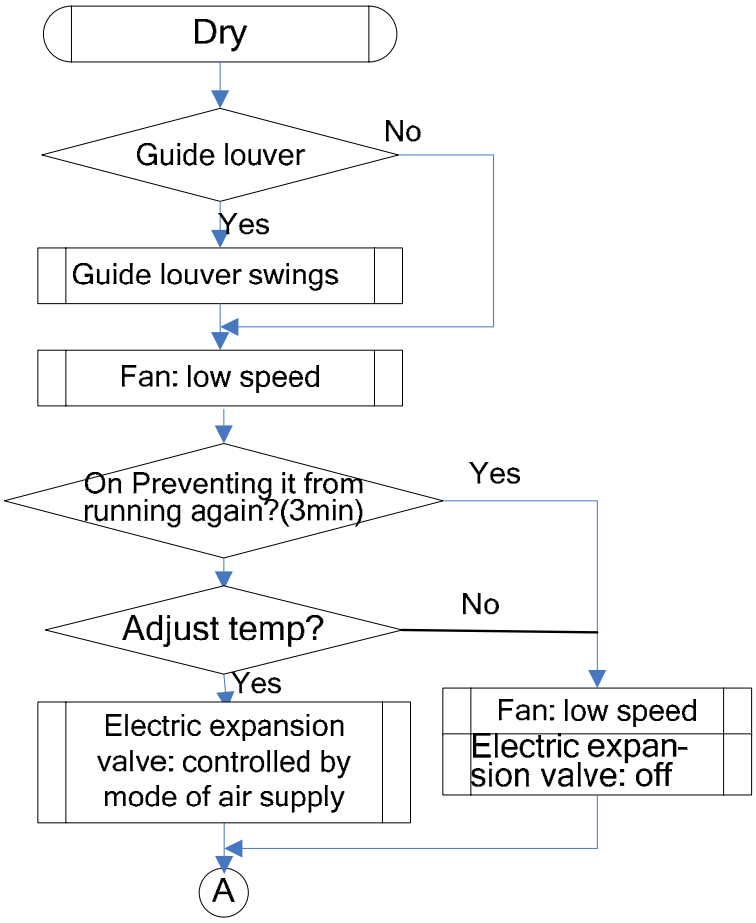
1.2.1 Operation Flowchart of Indoor Unit



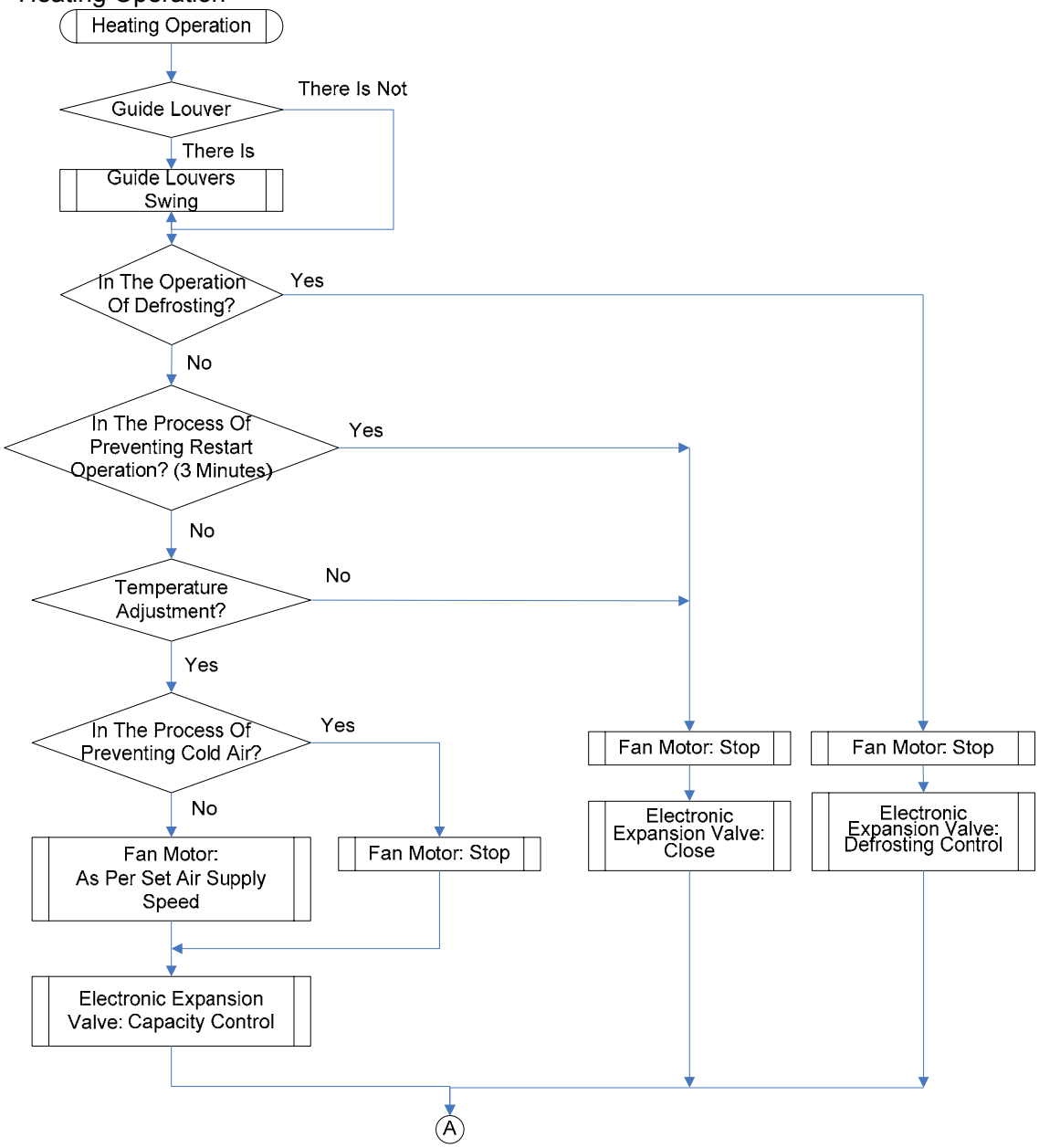
- Cooling Operation



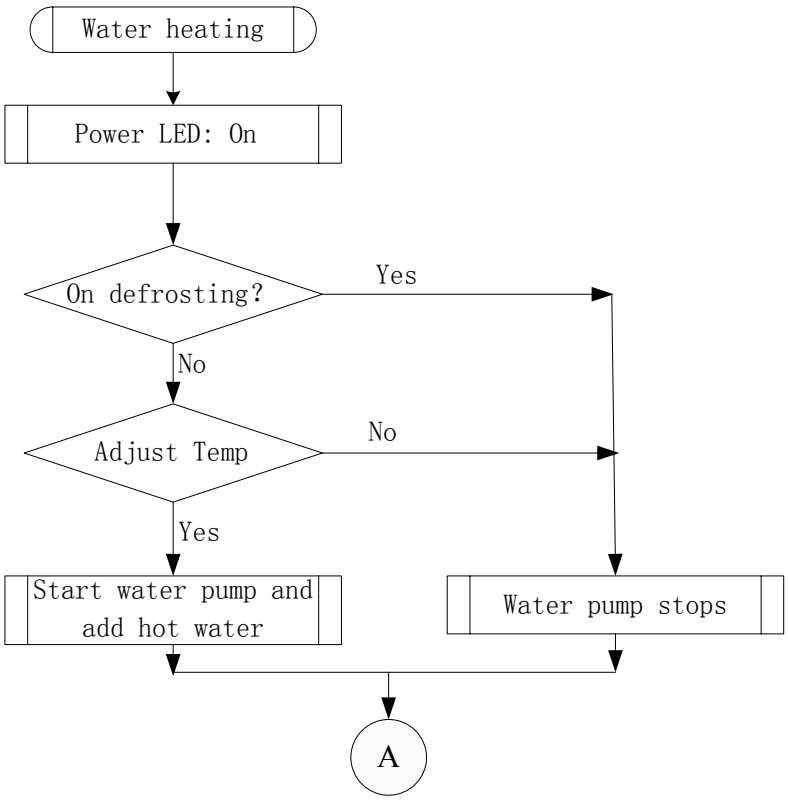
- Dry Operation



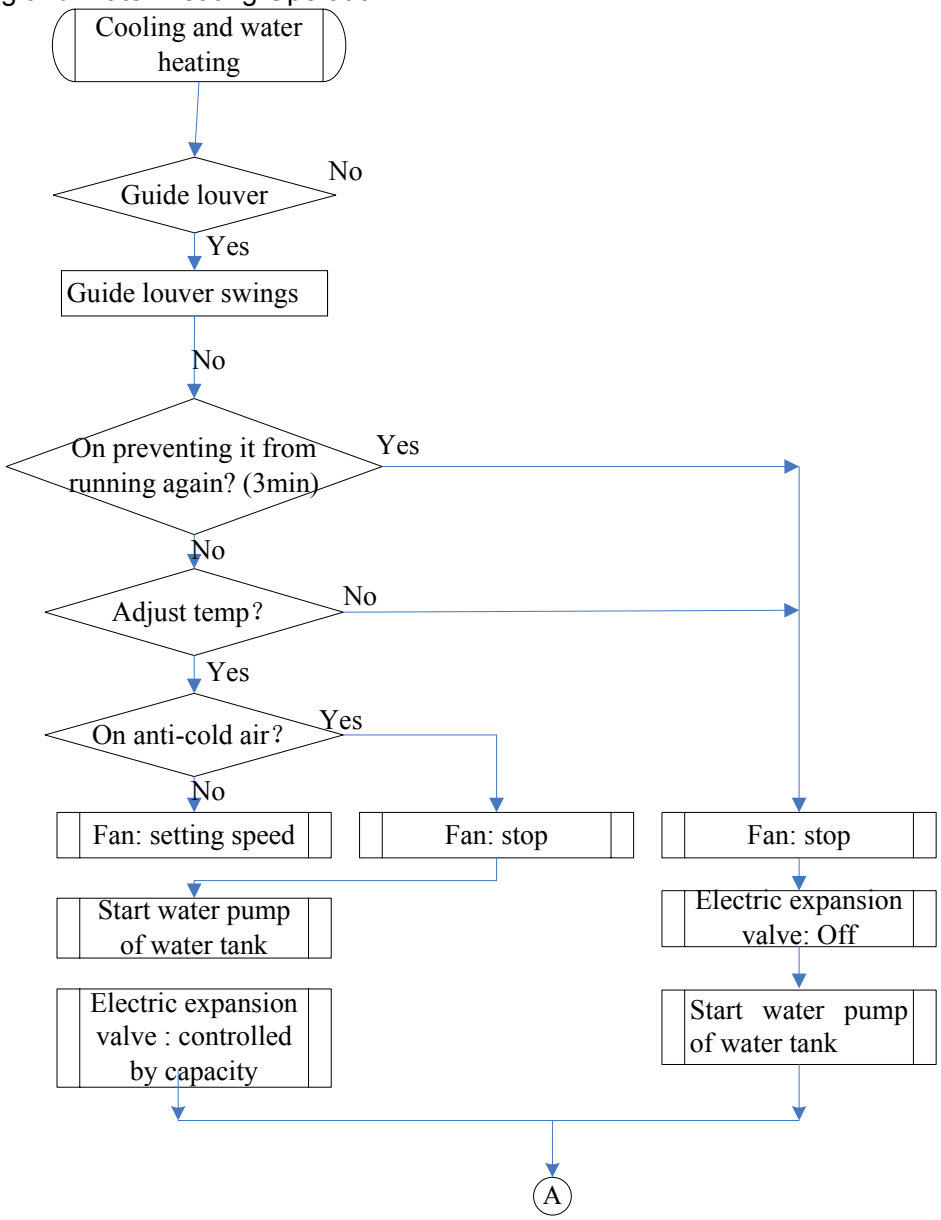
- Heating Operation



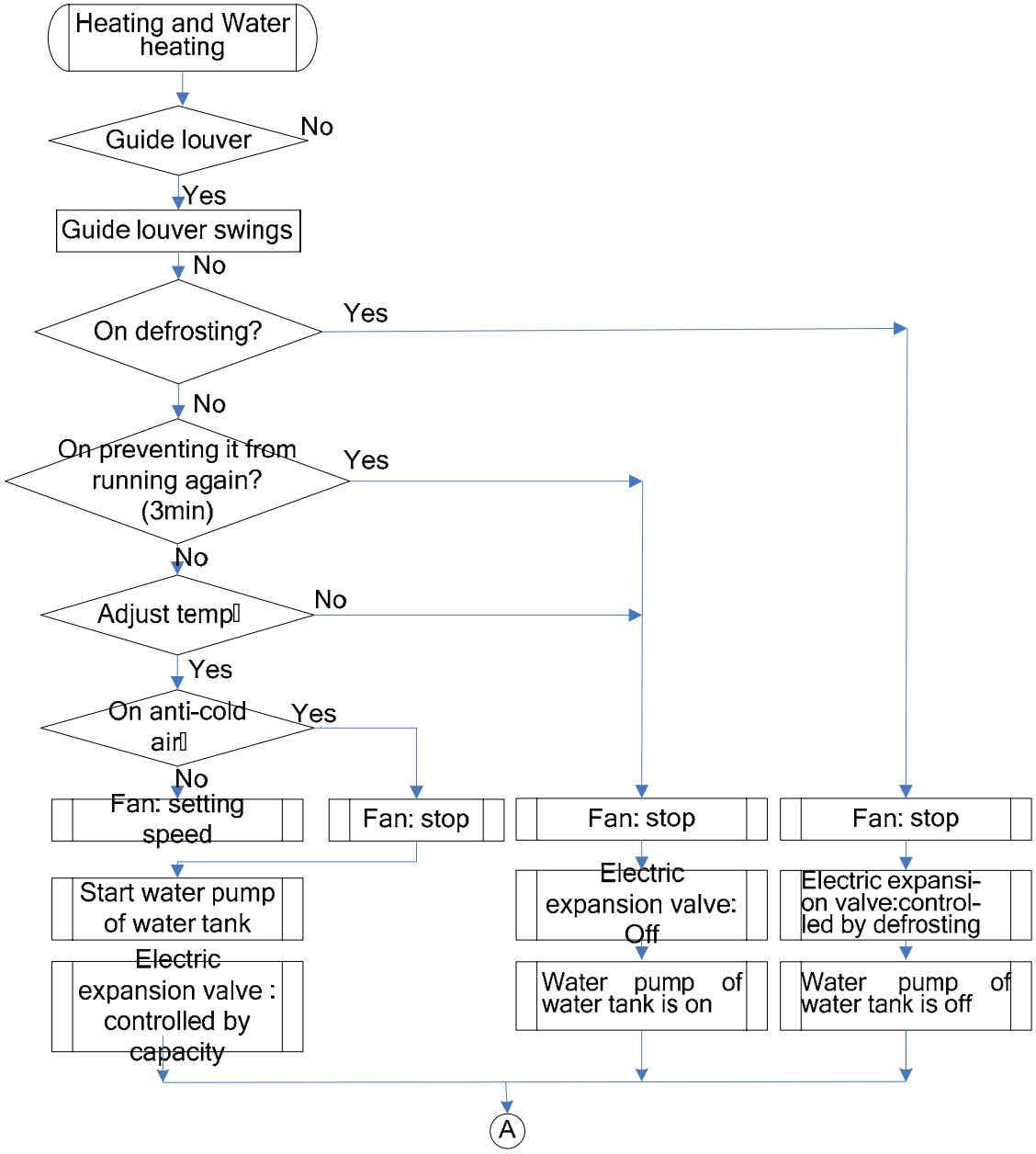
- Water Heating Operation


Water heating
Power LED: On
On defrosting?
Yes
No
Adjust Temp
No
Yes
Start water pump and add hot water
Water pump stops
A

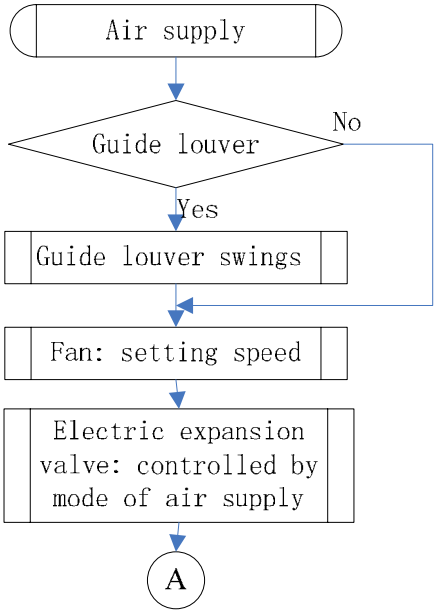
- Cooling and Water Heating Operation



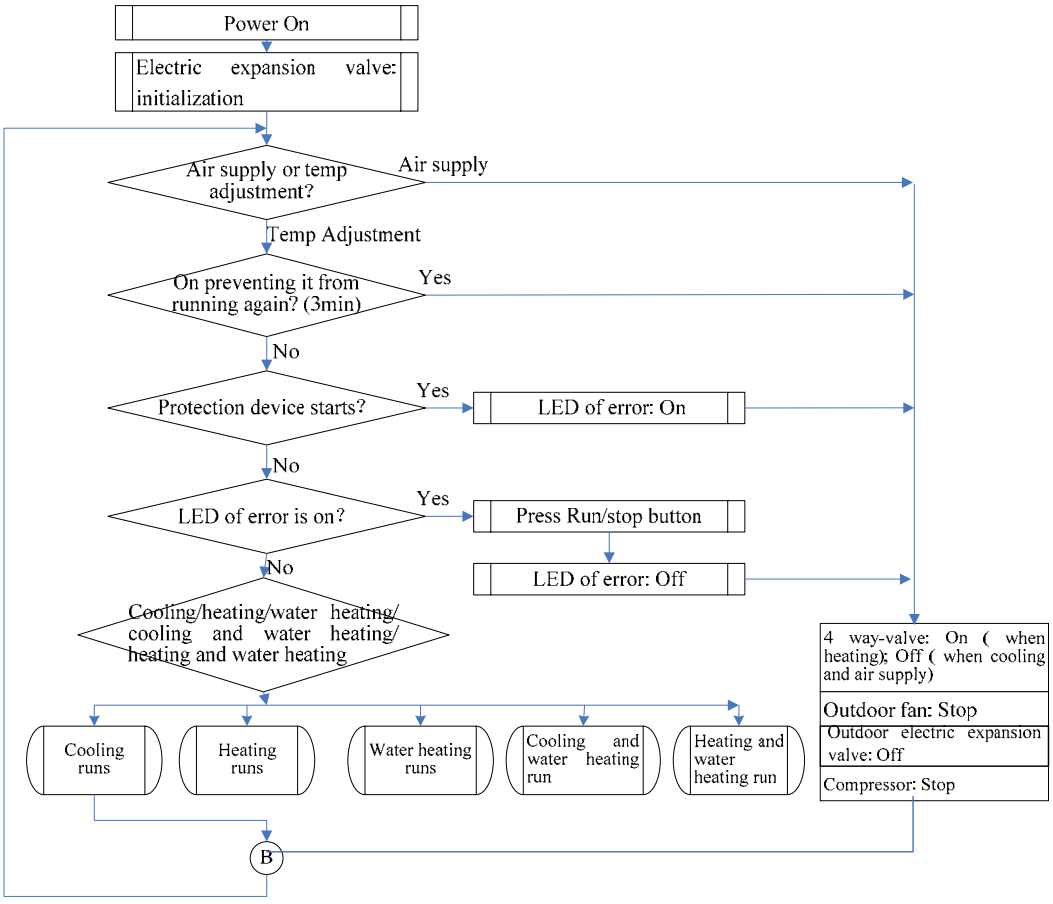
- Heating and Water Heating Operation



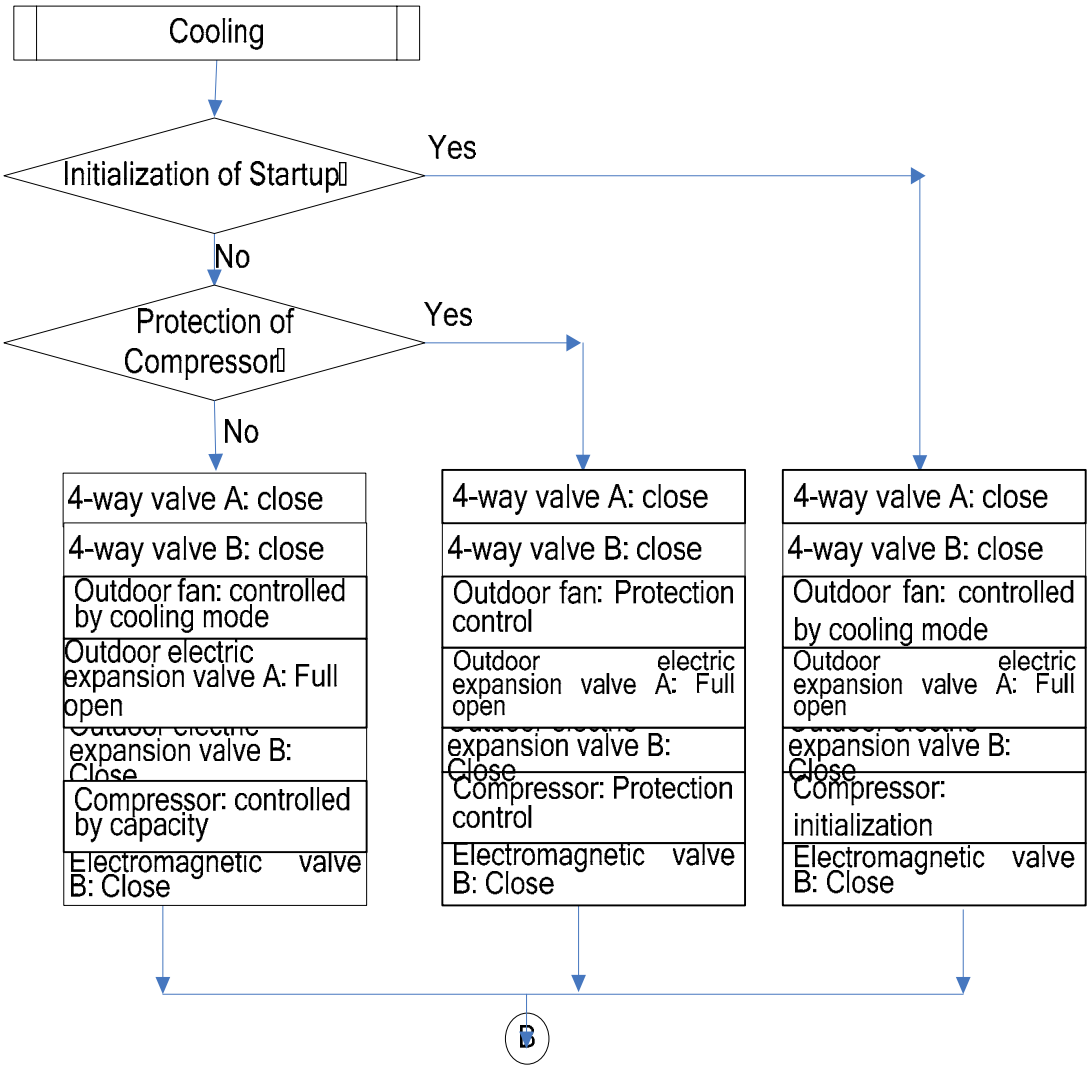
- Air Supply Operation



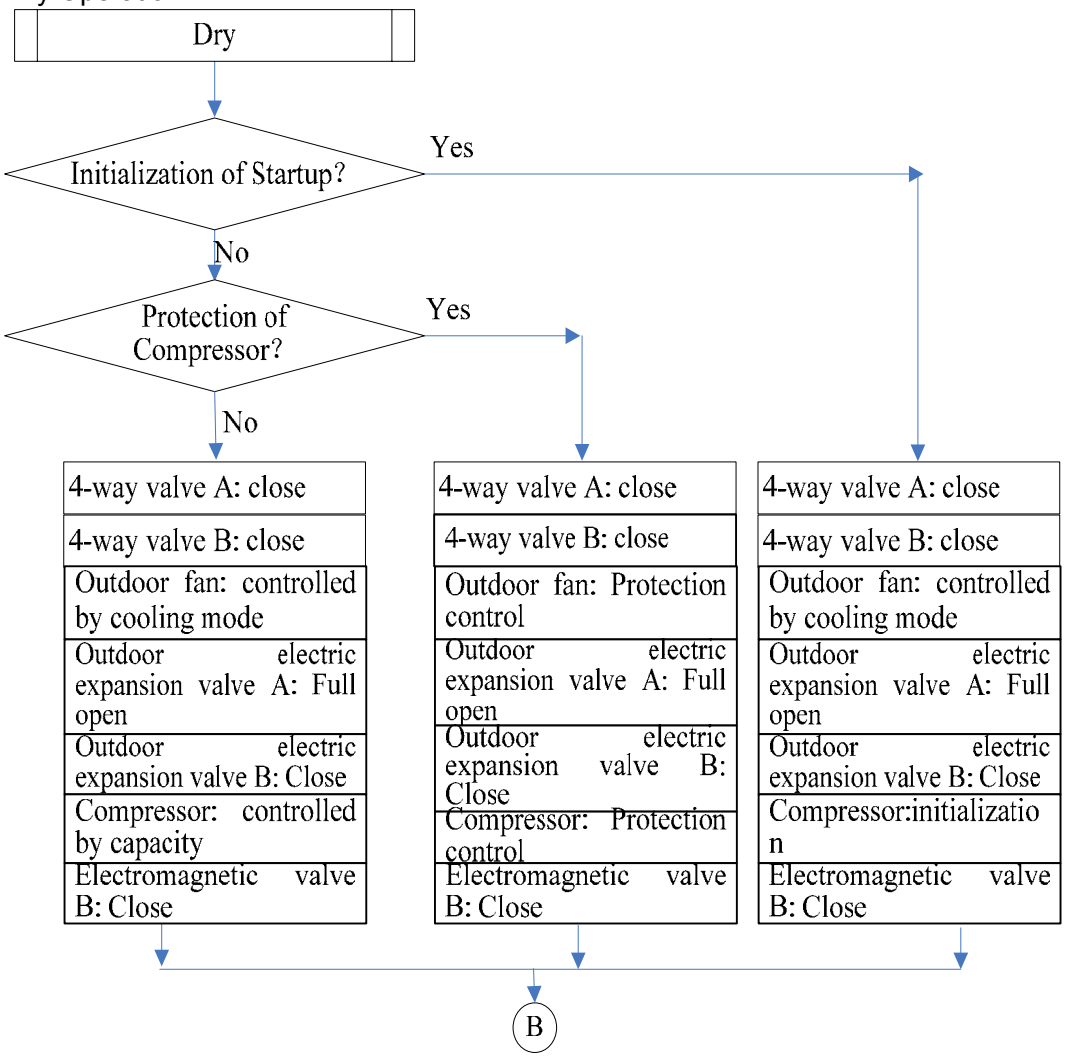
1.2.2 Operation Flowchart of Outdoor Unit



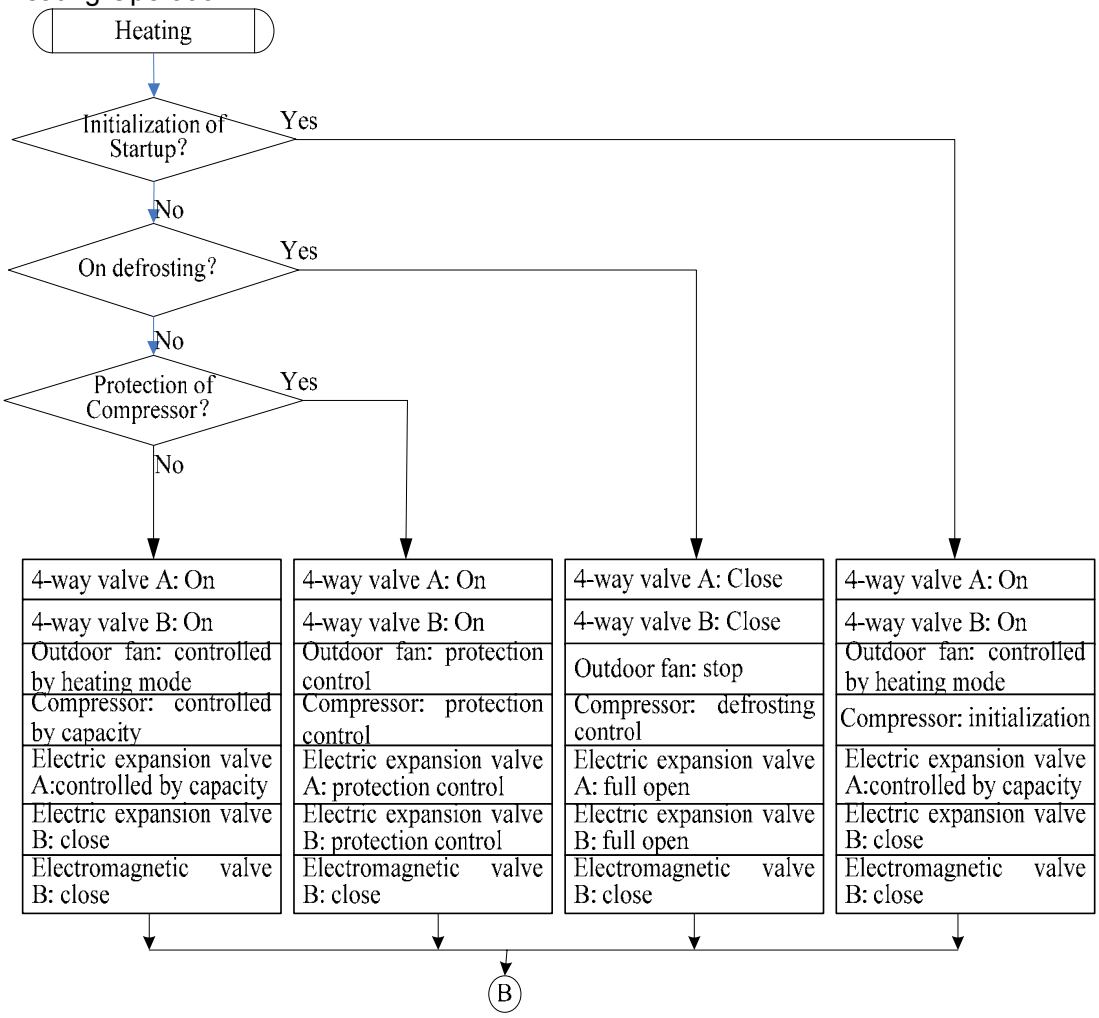
- Cooling Operation



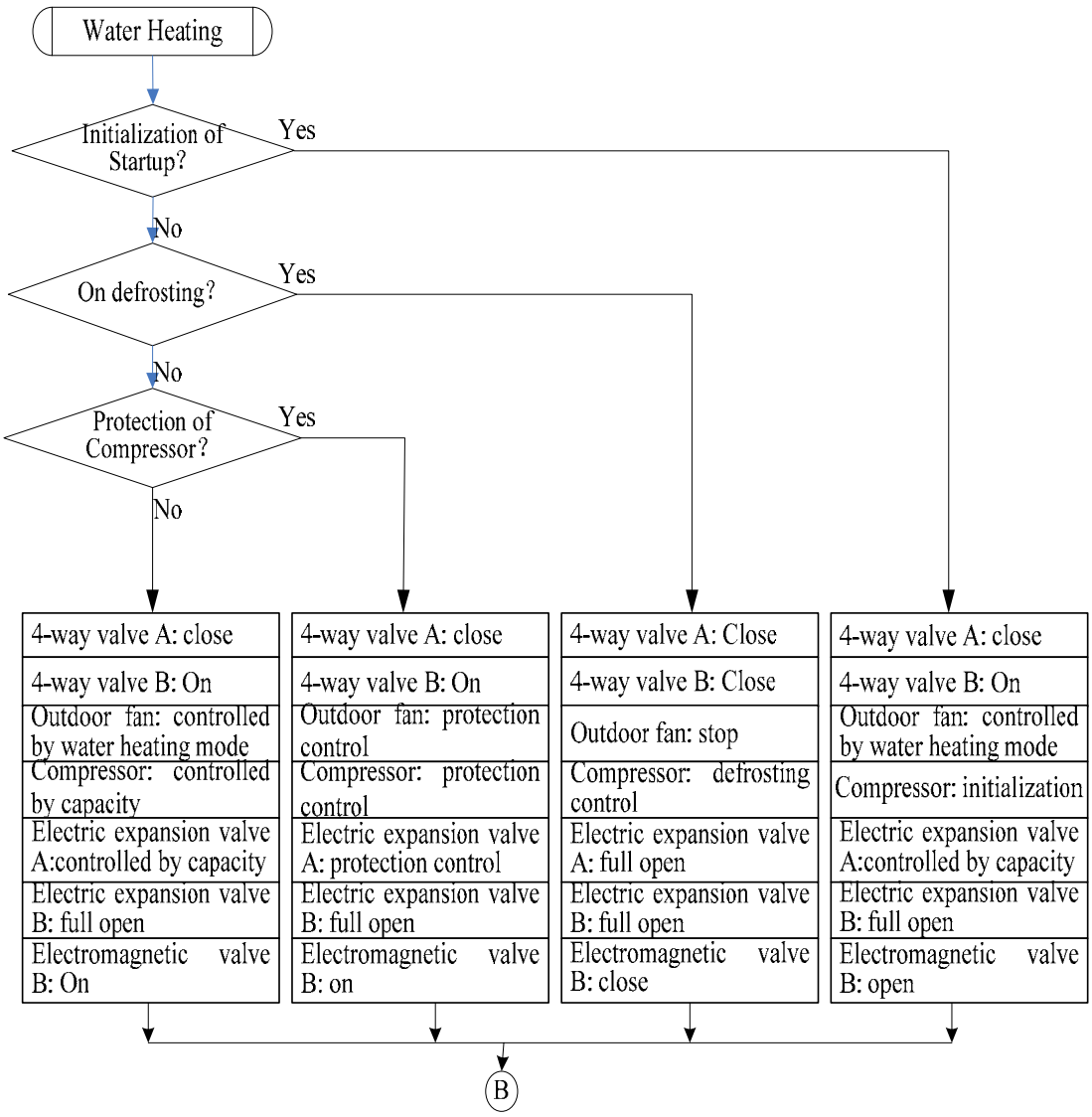
- Dry Operation



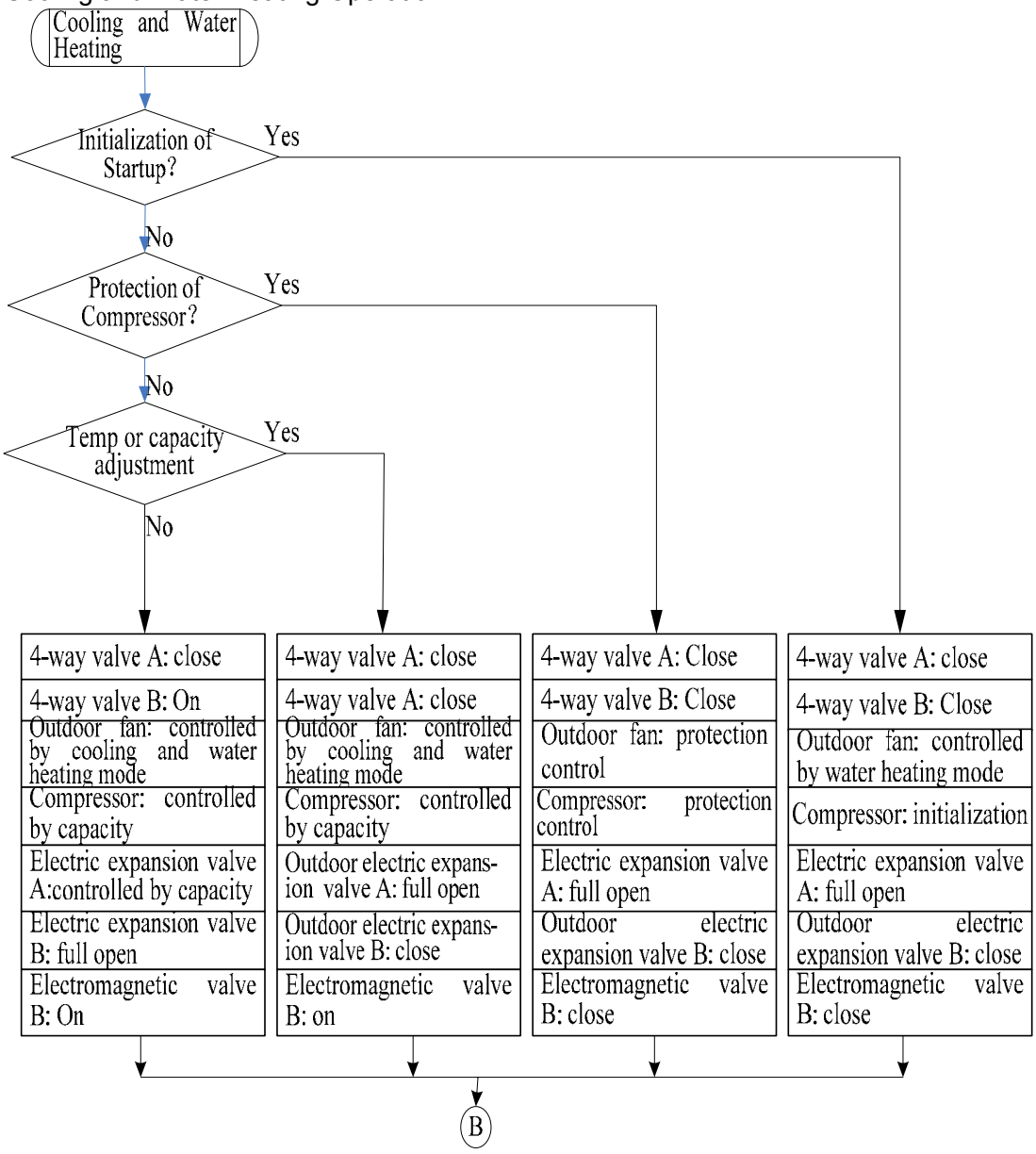
- Heating Operation



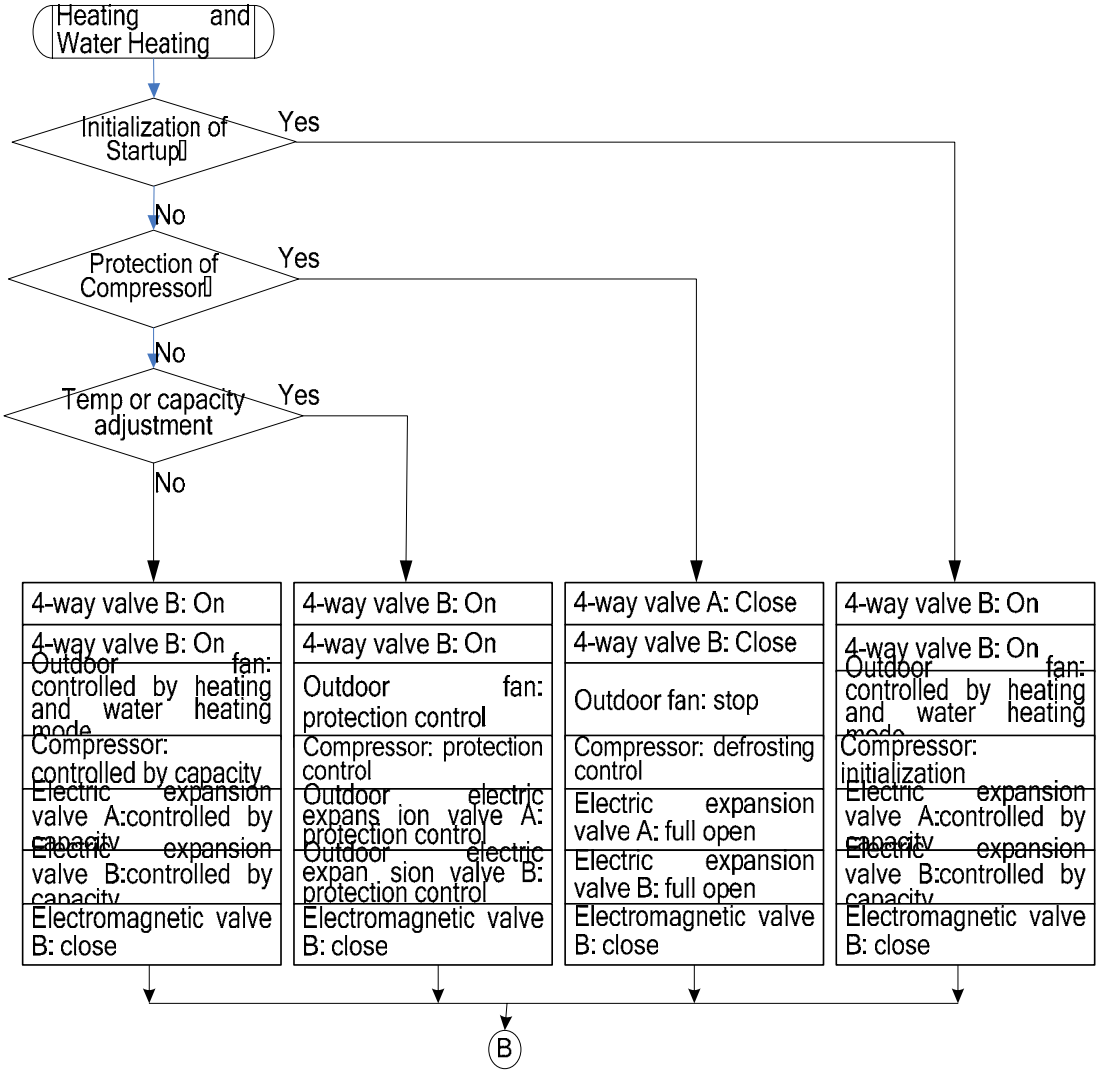
- Water Heating Operation


Water Heating
Initialization of Startup?
Yes
No
On defrosting?
Yes
No
Protection of Compressor?
Yes
No
4-way valve A: close
4-way valve B: On
Outdoor fan: controlled by water heating mode
Compressor: controlled by capacity
Electric expansion valve A:controlled by capacity
Electric expansion valve B: full open
Electromagnetic valve B: On
4-way valve A: close
4-way valve B: On
Outdoor fan: protection control
Compressor: protection control
Electric expansion valve A: protection control
Electric expansion valve B: full open
Electromagnetic valve B: on
4-way valve A: Close
4-way valve B: Close
Outdoor fan: stop
Compressor: defrosting control
Electric expansion valve A: full open
Electric expansion valve B: full open
Electromagnetic valve B: close
4-way valve A: close
4-way valve B: On
Outdoor fan: controlled by water heating mode
Compressor: initialization
Electric expansion valve A:controlled by capacity
Electric expansion valve B: full open
Electromagnetic valve B: open
B

- Cooling and Water Heating Operation


Cooling and Water Heating
Initialization of Startup?
Yes
No
Protection of Compressor?
Yes
No
Temp or capacity adjustment
Yes
No
4-way valve A: close
4-way valve B: On
Outdoor fan: controlled by cooling and water heating mode
Compressor: controlled by capacity
Electric expansion valve A:controlled by capacity
Electric expansion valve B: full open
Electromagnetic valve B: On
4-way valve A: close
4-way valve A: close
Outdoor fan: controlled by cooling and water heating mode
Compressor: controlled by capacity
Outdoor electric expansion valve A: full open
Outdoor electric expansion valve B: close
Electromagnetic valve B: on
4-way valve A: Close
4-way valve B: Close
Outdoor fan: protection control
Compressor: protection control
Electric expansion valve A: full open
Outdoor electric expansion valve B: close
Electromagnetic valve B: close
4-way valve A: close
4-way valve B: Close
Outdoor fan: controlled by water heating mode
Compressor: initialization
Electric expansion valve A: full open
Outdoor electric expansion valve B: close
Electromagnetic valve B: close
B

- Heating and Water Heating Operation


Heating and Water Heating
Initialization of Startup
Yes
No
Protection of Compressor
Yes
No
Temp or capacity adjustment
Yes
No
4-way valve B: On
4-way valve B: On
Outdoor fan: controlled by heating and water heating mode
Compressor: controlled by capacity
Electric expansion valve A:controlled by capacity
Electric expansion valve B:controlled by capacity
Electromagnetic valve B: close
4-way valve B: On
4-way valve B: On
Outdoor fan: protection control
Compressor: protection control
Outdoor electric expans ion valve A: protection control
Outdoor electric expan sion valve B: protection control
Electromagnetic valve B: close
4-way valve A: Close
4-way valve B: Close
Outdoor fan: stop
Compressor: defrosting control
Electric expansion valve A: full open
Electric expansion valve B: full open
Electromagnetic valve B: close
4-way valve B: On
4-way valve B: On
Outdoor fan: controlled by heating and water heating mode
Compressor: initialization
Electric expansion valve A:controlled by capacity
Electric expansion valve B:controlled by capacity
Electromagnetic valve B: close
B

2 CONTROL FUNCTION OF THE UNITS

2.1 Control Function of the Outdoor Unit

1）The Capacity of Compressor Output

The capacity of compressor is counted by the indoor load or hydro-box load, and the former relates to running or stopping of indoor unit ,the setting temperature,the outdoor temperature and the indoor temperature. the hydro-box load relates to running or stopping of hydro-box,the setting water temperature, actual temp, the outdoor temperature and the indoor temperature.Then the capacity of compressor output will match the indoor loads and hydro-box optimally.

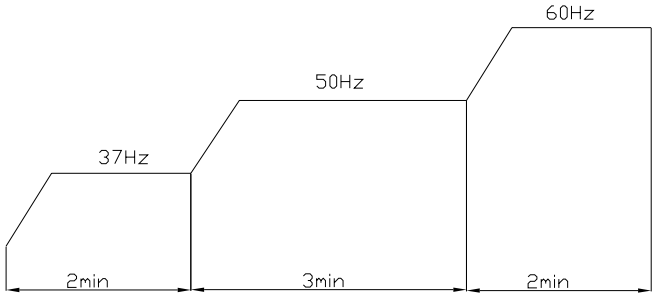
2）Compressor Startup Control

◆ Except the system receiving the stop signal,if the system starts,it must run for 6min at least.Once the compressor stops,it restarts after 3min later at least.

◆ The compressor has to be stopped for at least 3min once it stops. During this 3min, the compressor can't started up.

◆When the complete unit is under heating mode and the capacity requirement of each indoor unit is 0, the compressor must be stopped.

◆Initialization Control of Compressor



3) Outdoor Fan Control

The closed-cycle control of direct current motor is adopted: it detects the actual rotational speed of motor(feedback pulse of motor) and then compares it with the target rotational speed. Finally it output proper duty ratio to change the rotational speed so that the decination can be cleared.

the frequency of fan adjusts from 0 to 55Hz. 0 means the stop of fan and 50 means fastest speed of fan.

◆ Cooling Mode:

Initialization: Within 3min after the unit is started, set the initial fan frequency according to outdoor temperature. This is applicable when the unit is initially started or the mode of the unit is shifted.

Output		P＜25%	25%≤P＜40%	40%≤P＜60%	60%≤P＜80%	P≥80%
Fan Frequency	T≤0	0Hz	0Hz	1Hz	1Hz	1Hz
	0＜T≤12	0Hz	1Hz	1Hz	1Hz	5Hz
	12＜T≤20	10Hz	15Hz	20Hz	23Hz	25Hz
	20＜T≤35	28Hz	33Hz	38Hz	44Hz	Max.
	35＜T≤40	36Hz	38Hz	41Hz	44Hz	Max.
	T＞40	Max.	Max.	Max.	Max.	Max.
Remarks：Max. value is 50Hz						

Fan Control after 3min

a）Frequency of fan is adjusted in 3min later according to the change of pressure.

b）The max.frequency of fan is 50HZ and the min. is in the below table.(OHz means the stop of fan regarding the drive of fan)

c）50Hz Once the pressure Pc≥55℃ is detected, the frequency of outdoor fan will change to 50 Hz immediately.

Definition: under cooling mode, if the ambient temp ≤14 ℃, the cooling is Hypothermy cooling.

Fan Control Under Hypothermy Cooling

Under Hypothermy cooling, high pressure is between 30 ℃ and 50 ℃. If high pressure is ≤30 ℃, the frequency of fan will decrease 1 Hz; If high pressure is ≤25 ℃, the frequency of fan will change to be 0 Hz. If high pressure is ≥50 ℃, frequency of fan will increase 1 Hz; If high pressure is ≥53 ℃, frequency of fan will increase 5 Hz. Once the pressure Pc≥55℃ is detected, the frequency of outdoor fan will change to 50 Hz immediately.The fan speed under Hypothermy cooling is not adjusted periodically.

Under cooling mode, if the ambient temp >14 ℃,frequency is adjusted according to the below table.

Inspect the discharge pressure after the unit has been running for 3min. Adjust the frequency of fan every 2 periods according to the discharge pressure and stabilize the pressure within optimized range. If the pressure is higher or lower than the specified range, adjust the frequency accordingly.

◆ Cooling and Water Heating Mode：Detect discharge pressure after 3min startup of the unit. Fan frequency is adjusted every 2 periods according to the average value of discharge pressure so that the pressure can be restrained within optimized range. If the pressure is higher than the setting range, the frequency of outdoor fan will increase; If the pressure is lower than the setting range, the frequency of outdoor fan will decrease.

Initialization: Initial frequency of fan is determined by the ambient temp during the 3min after the startup of the unit which is applicable when the unit is just started or the mode of the unit is shifted or the frequency will be adjusted according to pressure. T in the below table means the min value. of ambient temp and water temp.

Output		P＜25%	25%≤P＜40%	40%≤P＜60%	60%≤P＜80%	P≥80%
Fan Frequency	T≤0	0Hz	0Hz	1Hz	1Hz	1Hz
	0＜T≤12	0Hz	1Hz	1Hz	1Hz	5Hz
	12＜T≤20	10Hz	15Hz	20Hz	23Hz	25Hz
	20＜T≤35	28Hz	33Hz	38Hz	44Hz	Max.
	35＜T≤40	36Hz	38Hz	41Hz	44Hz	Max.
	T＞40	Max.	Max.	Max.	Max.	Max.
Remarks：max.value is 50Hz						

Fan Control after 3min
Frequency of fan is adjusted in 3min later according to the change of pressure.
The max.frequency of fan is 50HZ and the min. is in the below table.
The relationship between lowest fan speed and capacity of compressor output is as follows:

Output Frequency of Compressor X	X≥68	67≥X≥50	49≥X≥40	39≥X≥30	X<30
Fan Frequency	40 HZ	30Hz	20hz	15 Hz	5 HZ

Detect discharge pressure after 3min startup of the unit. Fan frequency is adjusted every 2 periods according to the average value of discharge pressure so that the pressure can be restrained within optimized range. If the pressure is higher than the setting range, the frequency of outdoor fan will increase; If the pressure is lower than the setting range, the frequency of outdoor fan will decrease.

◆ Heating Mode:

Initialization: The fan runs at initial speed acoording to ambient temp for 3 min which is applicable when the unit is just started or the mode of the unit is shifted or the frequency will be adjusted according to pressure.

When calculated capacity of the complete unit ＞40％

Outdoor Ambient Temp	T≤11℃	11℃＜T≤15℃	15℃＜T≤22℃	T＞22℃
Fan Frequency	Max.	41Hz	33Hz	28Hz
Remarks：max.value is 50Hz				

When calculated capacity of the complete unit ≤40%

Outdoor Ambient Temp	T≤3	3＜T≤7	7＜T≤11	11＜T≤15	18＜T≤22	T＞22
Fan Frequency	Max.	41Hz	33Hz	28Hz	23Hz	21Hz
Remarks：max.value is 50Hz						

Fan Control after 3min

Frequency of fan is adjusted in 3min later according to the change of pressure.

Once the lowest value or the highest value of the frequency has been reached, it can't adjusted anymore.

The max.frequency of fan is 50HZ and the min. is in the below table.

Outdoor Ambient Temp	T≤11℃	11℃＜T≤15℃	15℃＜T≤22℃	T＞22℃
Lowest Fan Frequency	20	15Hz	10Hz	5Hz

Detect discharge pressure after 3min startup of the unit. Fan frequency is adjusted every 2 periods according to the average value of discharge pressure so that the pressure can be restrained within optimized range. If the pressure is higher than the setting range, the frequency of outdoor fan will increase; If the pressure is lower than the setting range, the frequency of outdoor fan will decrease.

◆ Heating/Water Heating Mode

The fan runs at initial speed acoording to ambient temp for 3 min which is applicable when the unit is just started or the mode of the unit is shifted or the frequency will be adjusted according to pressure.

When calculated capacity of the complete unit ＞40%

Outdoor Ambient Temp	T≤11℃	11℃＜T≤15℃	15℃＜T≤22℃	T＞22℃
Fan Frequency	Max.	41Hz	33Hz	28Hz
Remarks：max.value is 50Hz				

When calculated capacity of the complete unit ≤40%

Outdoor Ambient Temp	T≤3	3＜T≤7	7＜T≤11	11＜T≤15	18＜T≤22	T＞22
Fan Frequency	Max.	41Hz	33Hz	28Hz	23Hz	21Hz
Remarks：max.value is 50Hz						

Detect discharge pressure after 3min startup of the unit. Fan frequency is adjusted every 2 periods according to the average value of discharge pressure so that the pressure can be restrained within optimized range. If the pressure is higher than the setting range, the frequency of outdoor fan will increase; If the pressure is lower than the setting range, the frequency of outdoor fan will decrease.

◆Water Heating Mode

Initialization: is the same as that of the heating mode which is is applicable when the unit is just started or the mode of the unit is shifted or the frequency will be adjusted according to pressure. The highest value is 50HZ and

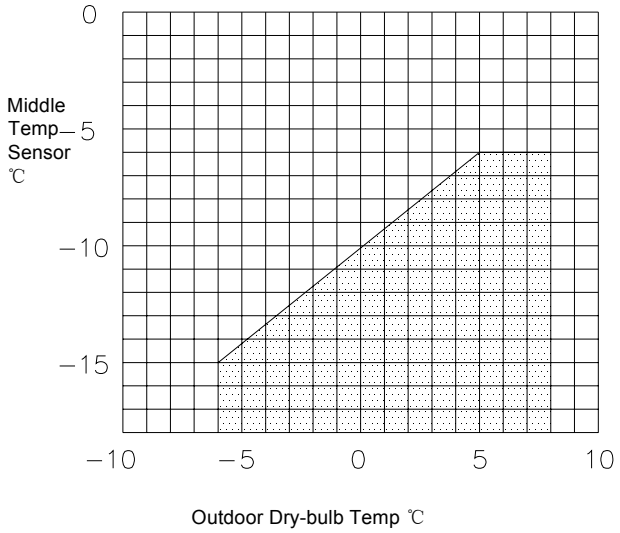
the lowest value is 5 HZ.

Detect discharge pressure after 3min startup of the unit. Fan frequency is adjusted every 2 periods according to the average value of discharge pressure so that the pressure can be restrained within optimized range. If the pressure is higher than the setting range, the frequency of outdoor fan will increase; If the pressure is lower than the setting range, the frequency of outdoor fan will decrease.

4) Defrosting Control

◆ Conditions of Startup of Defrosting:

when the heating is running for continuous 50min;when the temp of middle temp sensor and outdoor temp are lower than the curve which is shown in the picture for continuous 120s.



or the outdoor ambient temp is lower than -6℃； and the heating is running for continuous 2 hours;

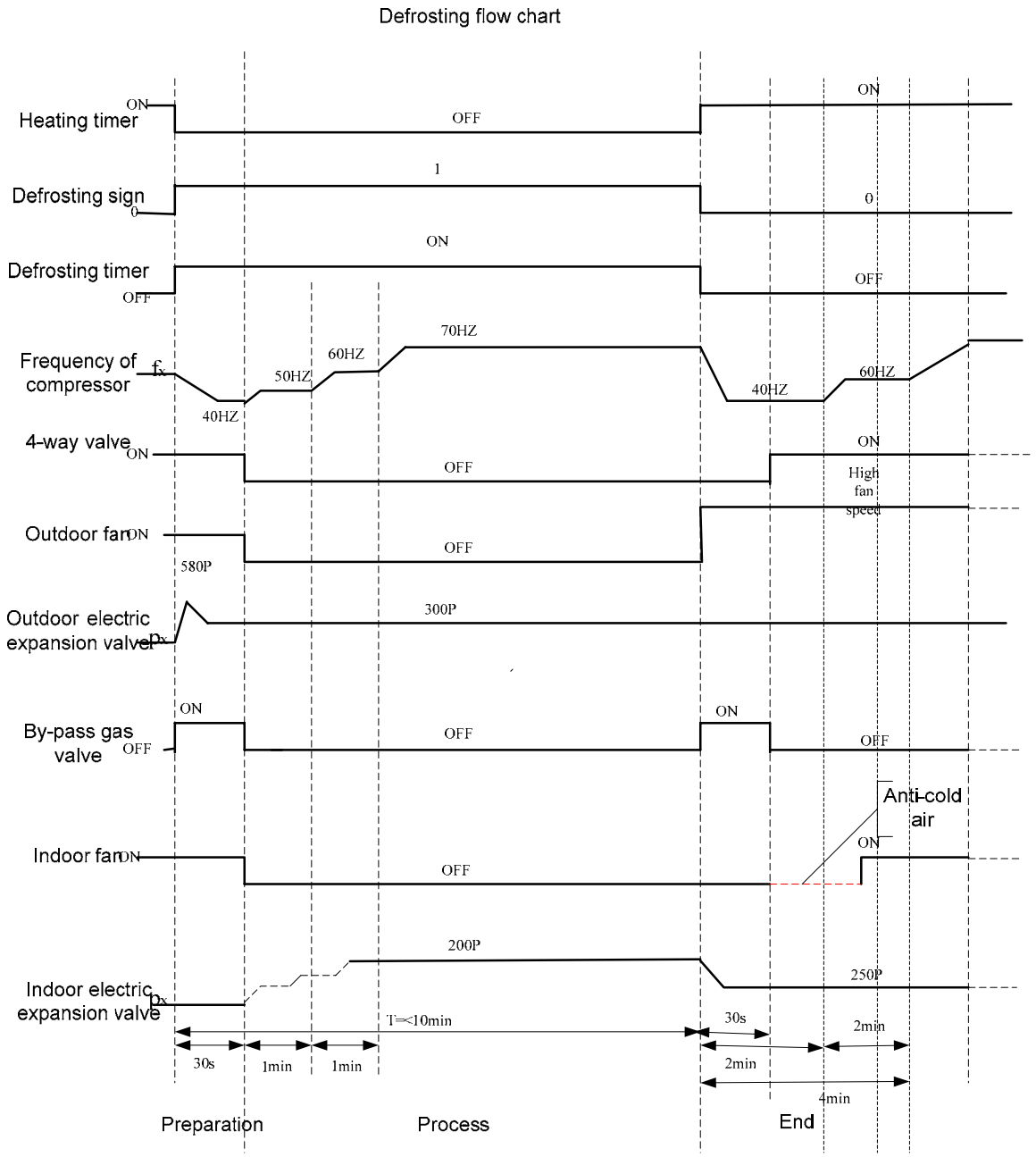
◆ Conditions of Stop of Defrosting:

The temp of coil of outdoor unit is higher than 15 ℃ or defrosting is running for 10min.

◆ Defrosting:

Defrosting is realized by switching the 4-way valve to cooling mode

Sequency chart of defrosting is as follows:



2.2 Control Function of Indoor Unit

1) Cooling Operation

◆ Cooling Capacity

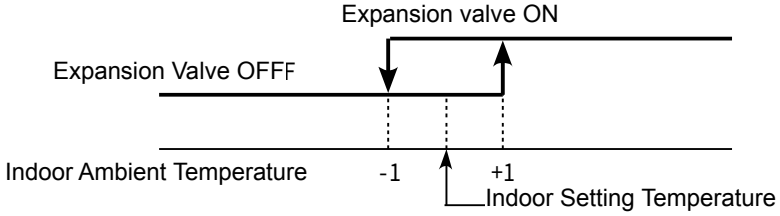
Outdoor unit will determine the compressor capacity output according to the capacity requirements of indoor unit; Indoor unit will determine the opening of indoor electronic expansion valve by the control of outdoor unit, and the electronic expansion valve should be set once for every 40 seconds.

◆ Temperature Control

Indoor unit will control the temperature by opening and closing of indoor electronic expansion valve (Shown as the following figure):

When the indoor unit capacity requirement is 0, you should close the electronic expansion valve;

When the indoor unit of capacity requirement is not 0, you should open the electronic expansion valve

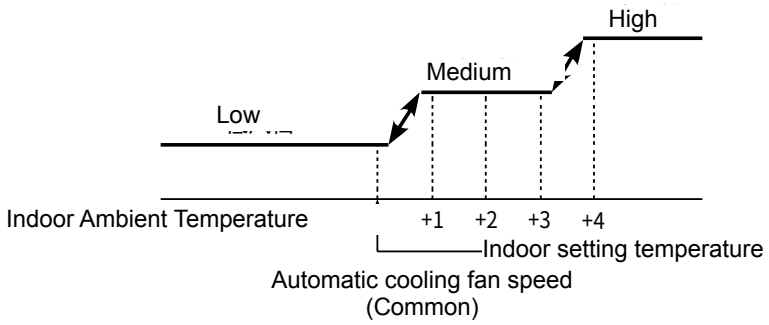


If all the indoor units' temperatures of a unit are up to temperature spot, then the capacity needs is o. the outdoor unit will stop the compressor, and all the indoor electromagnetic expansion valve will be closed.

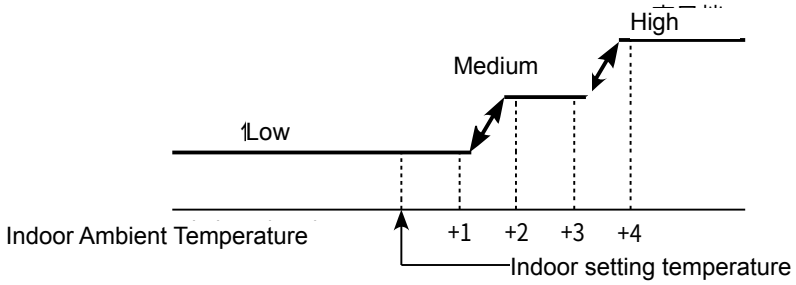
◆Indoor Fan Action

When the indoor unit is opened and the fan is not set at automatic fan speed, the indoor fan will unceasingly run at the set speed regardless of the capacity requirement is 0 or not.

When the indoor fan is set at automatic fan speed, the fan will determine the fan according to the changes of indoor ambient temperature, shown as the following figure:



Automatic cooling fan speed
(Common)



Automatic cooling fan speed
(Trendy)

Automatic fan speed switching will be detected every 30 seconds.

If the indoor fan is closed at first, the fan will be forced to run at high speed for 8s after start-up, then changed to setting speed.

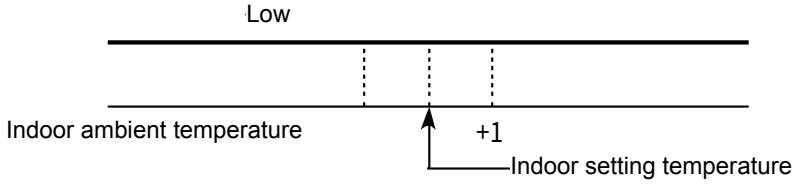
◆ Blowing Residual Cold Air Control

When the indoor unit is turned off, the fan will run for 0-60 seconds at the setting speed or automatic speed

When the capacity requirement of indoor unit is 0, the electronic expansion valve of indoor unit will be closed, and then the fan will unceasingly run at the setting speed or automatic speed.

2) Dry Operation

When the units work under dry mode, the indoor fan could only work at low speed (no matter what speed is set). All other actions are the same with cooling operation. Please refer to cooling operation.



If the indoor fan is closed at first, the fan will be forced to run at high fan for 8s after start-up, then changed to setting speed.

2) Heating Operation

◆ Heating Capacity

Outdoor unit will determine the compressor capacity output according to the capacity requirements of indoor unit.

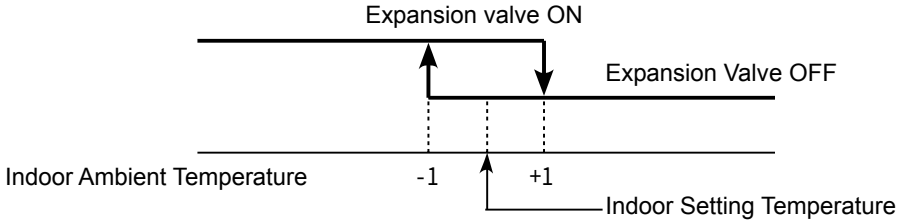
Indoor unit will determine the opening of indoor electronic expansion valve by the control of outdoor unit, and the electronic expansion valve should be set once for every 40 seconds.

◆ Temperature Control

Indoor unit will control the temperature by opening and closing of indoor electronic expansion valve (Shown as the following figure):

When the indoor unit capacity requirement is 0, the electronic expansion valve should be closed;

When the indoor unit of capacity requirement is not 0, the electronic expansion valve should be open.

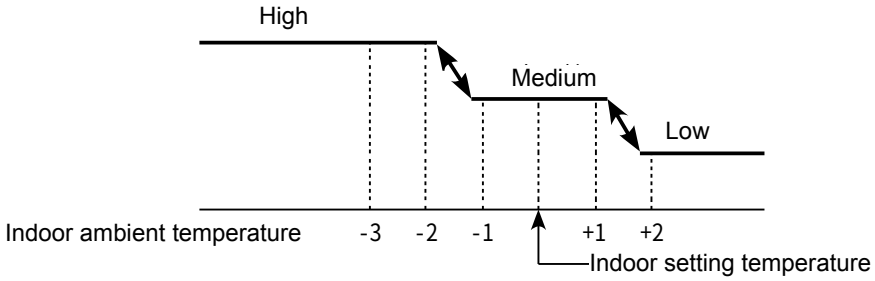


◆ Fan Control

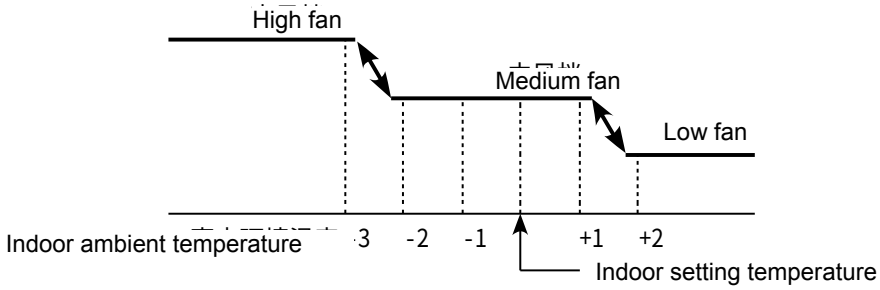
When the indoor unit has capacity requirement:

If the automatic fan speed is not set, the indoor fans will unceasingly run at the setting speed.

When the indoor fan is set at automatic speed, the fan will determine the fan speed according to the changes of indoor ambient temperature, shown as the following figure:



Automatic heating fan speed
(Common)



Automatic heating fan speed
(Trendy)

Automatic fan switching will be detected every 30 seconds.

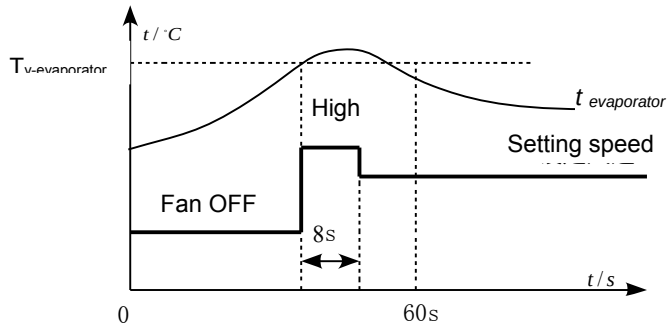
If the indoor fan is closed at first, the fan will be forced to run at high fan for 8s after started-up, then changed to setting speed.

◆ Anti cold air operation

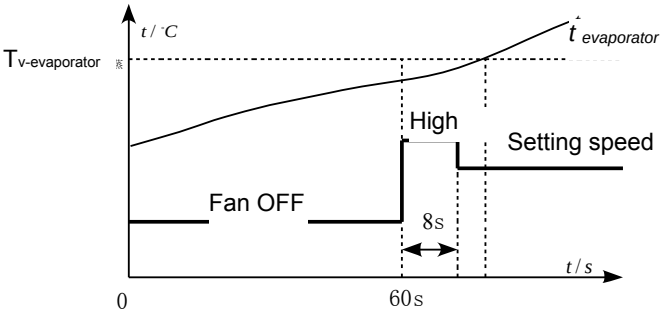
When the indoor unit has the capability requirement, the indoor fan will be forced into the off state, and run according to the following conditions:

If the indoor unit evaporator temperature $t_{evaporator}$ has reached the valve value $T_{v\text{-}evaporator}$, then the indoor fan will run at the set fan speed after running 8 seconds at high speed; If the indoor unit evaporator temperature $t_{evaporator}$ has still not reached the valve value $T_{v\text{-}evaporator}$ after 1 min, the indoor fan will be forced to run at high speed for 3s and then run at the setting speed; shown as the following table:

Anti-cold air valve value T v-evaporator table（℃）	Model	Series of cassette and duct types	Series of wall mounted type
	$T_{v\text{-}evaporator}$	35	39



$t_{evaporator}$ Reaching the valve value within one minute



$t_{evaporator}$ Failing to reach the valve value within one minute

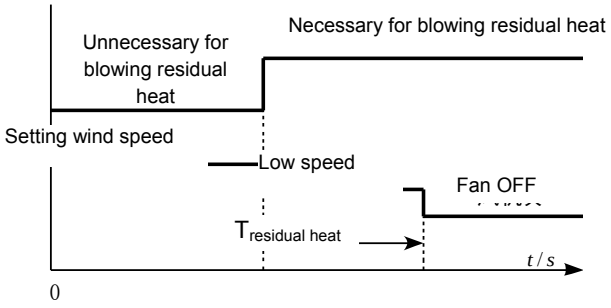
Once the indoor unit started under heating operation, if the fan stops in any case (including starting up, defrosting, fault, no capability needs), the anti cold air operation will keep before starting the fan for the next time.

Once the indoor fan is started, unless the fan stops, the anti cold air operation will not take effect even $t_{evaporator} < T_{v\text{-}evaporator}$ again.

◆ Blowing Residual Heat Operation

When the indoor unit runs under heating mode, if it should be stopped for reaching the temperature spot, fault, defrosting etc., you should carry on the blowing residual heat operation before stop, in order to exclude the inner surplus heat of evaporator and electric heater.

When the indoor unit needs to carry out blowing residual heat operation, the indoor fan should be switch to low fan speed, and turn off the indoor fan after running the corresponding period $T_{residual\ heat}$. Show as the following figure:



The corresponding residual heat removal period for different models in different situations is listed in the following table.

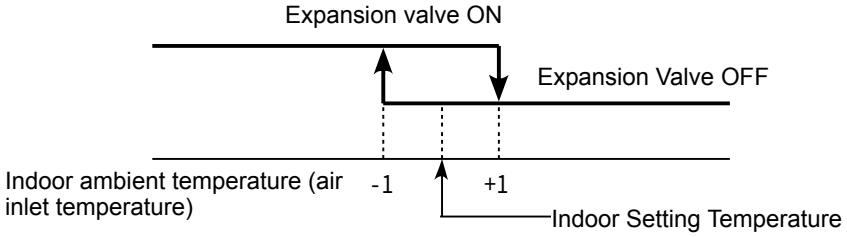
	The blowing period for residual heat in different situations $T_{residual\ heat}$ (s)			
Model	Stop	Reaching the temperature point	Entering into the defrosting	Malfunction stop
Duct Type Series	100	60-100	60	60
Wall Mounting Type Series	50	10-50	10	10
Cassette Type Series	60	Low wind, non-stop	20	20

Special case: For the indoor units of cassette series, it will run at low fan speed when it reaches the temperature point, and do not need to stop the fan.

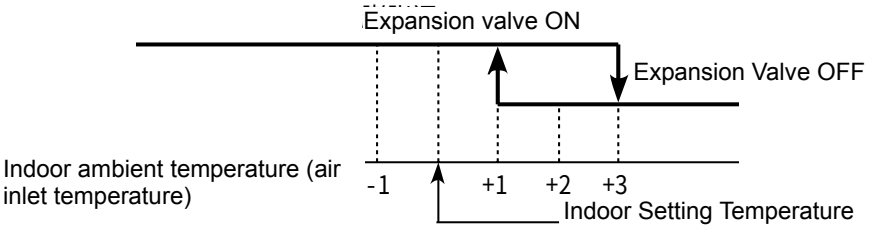
3) Compensation for Heating Temperature

Under the standard conditions, when the air conditioner is running, the units will regulate the capacity output of indoor unit according to its setting temperature and air inlet temperature, and in order regulate the indoor temperature to the set temperature. When the air conditioner is installed too high and under the heating mode, the hot air will easily gather up due to the density, so the temperature of living space may not reach the set temperature, leading to uncomfortable feeling.

Therefore, you should use the temperature compensation function under heating mode: to reflect the real temperature of living space by reducing 2 degrees of the air inlet temperature. You may keep comfortable temperature in the living space. Shown as the following figure:



Temperature regulation under standard conditions



Temperature regulation with temperature compensation

4) Auto swing control

The indoor units of Wall mounting and cassette series have the swing function. By this function, you can increase the indoor air convection and the uniformity of indoor temperature regulation.

◆Reset

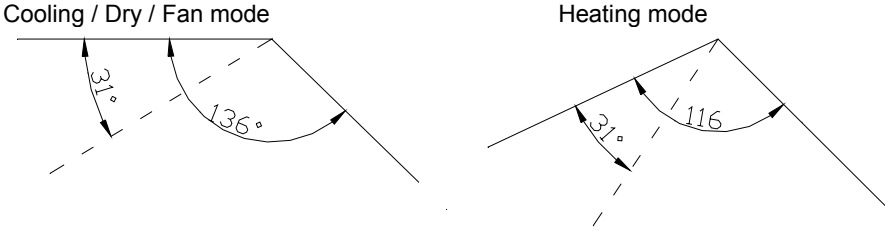
The swing louver will sway once automatically when electrifying for the first time. It can make the swing louver return to the initial positions, and ensure the accuracy of swing louver action.

◆Using Indoor Units' Own Buttons for Start

When you use the indoor units' own buttons for start, the automatic swing will work automatically. The swing louver will swing back and forth between the max and min positions (there are different max and min positions according to different modes)

◆ Use the Wired Controller or Remote Controller for controlling

When using the wired controller or remote controller for start, if you don't set the automatic swing signal when starting, the swing louver will stop at default location (The default locations are different according to different modes). If the automatic swing signal has been set well when starting, the automatic swing will automatically work. The swing louver will swing back and forth between the max and min positions (there are different max and min positions according to different modes).



When the wired controller or remote controller sends an automatic swing signal, the automatic swing function will be started, and the swing louver begins to swing from current position.

When the wired controller or remote controller sends a stopping swing signal, the automatic swing function will be stopped, and the swing louver stops at current position.

◆ Others

When the indoor unit receives the shutdown signal, detecting the fault signal and defrosting signal unless the auxiliary electric heating protection, no matter the swing louver are under any state, they will all stop at initial position after the cessation of indoor fans.

When the indoor units detected the auxiliary electric heating protection, no matter the indoor units are under any state, the automatic swing will work, and the indoor fans will run at high speed at the same time.

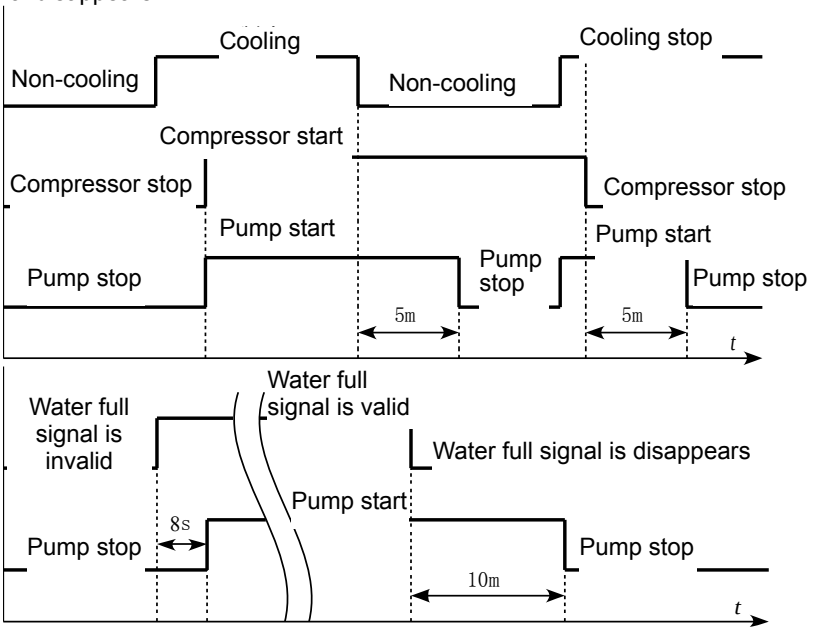
5) Controlling of drainage pump motor

Cassette indoor units have drainage pump device to discharge the condensation water which is produced during cooling or drying.

◆ When the indoor unit is operating under cooling or dry mode, the water pump and compressor will start at the same time.

◆ When powering off or cooling stop, drying stop or transfering to other modes, the water pump will be powered off after five miuntes.

◆When water level is flooded for 8 second at any mode (include power-off), the water pump must be started at once. The pump will not stop running untill the flooding signal disappears and it will stop running ten minutes after the flooding signal disappears.



6) Anti- frosting operating undercooling and drying operation

When evaporator temperature is too low under cooling and drying operation, in order to avoid indoor unit frosting and affect the cooling effect, you should carry out anti frosting operating at approproate time.

Under cooling and drying mode, after the compressor starts for $T_{Compressor}$ (minutes), when continuously measuring that the $T_{Tube\text{-}inlet\ temperature} \leq T_{Frosting\ temperature}$ of evaporator for $T_{antifrosting}$,, the antifreezing protection will operate and the indoor fan and swing fan will keep the former state; when the $T_{Tube\text{-}inlet\ temperature} \leq T_{Frosting\ temperature}$, the LED will not light and the controller will operate as setting mode.

The parameter of $T_{Compressor}$, $T_{Defending\ frost}$, $T_{Frosting\ temperature}$ and $T_{Reset\ temperature}$ will be different according to the model, as shown:

Model	$T_{Compressor}$ (m)	$T_{Defending\ frost}$ (m)	$T_{Frosting\ temperature}$ (℃)	$T_{Reset\ temperature}$ (℃)
Series of cassete and duct type	15	10	-4	15
Series of wall mounted type	6	3	0	10

7) Controling of indoor electronic expansion valve

◆ Reset control of indoor electronic expansion valve

When the indoor unit is energized, it will automatically carry out the electronic expansion valve reposition action, to make the electronic expansion valve return the initial position, and ensure the accuracy of expansion valve's action.

◆ Controling of superheating degree in cooling mode

In the operation process of cooling and drying , to keep suitable superheating degree, the unit will control the jaw opening of indoor electronic expansion valve according to the difference between entry temperature and setting

superheating value of indoor unit evaporator.It will be detected every 40 seconds. This process will stop when powering off, stop after reaching temperature point and malfunction.

◆ Controlling of supercooling degree in heating mode

In the operation process of heating, to keep suitable supercooling degree, the unit will control the jaw opening of indoor electronic expansion valve according to the difference between entry temperature and setting supercooling value of indoor unit evaporator. It will be detected every 40 seconds. This process will stop when powering off, stop after reaching temperature point and malfunction.

8) Controling of sensor test

◆ Ambient temp. sensor

When the ambient temperature is measured lower than -20℃ or higer than 100℃ for one minute continuously, the ambient sensor error signal will be sent(error code: F0), and then indoor unit will stop for abnormity.

When the environment sensor is in trouble, the environment temperature is tested lower than -20℃ or higer than 100℃ for one minute continuously, the ambient sensor error signal will disappear, and indoor unit will operate as the former state.

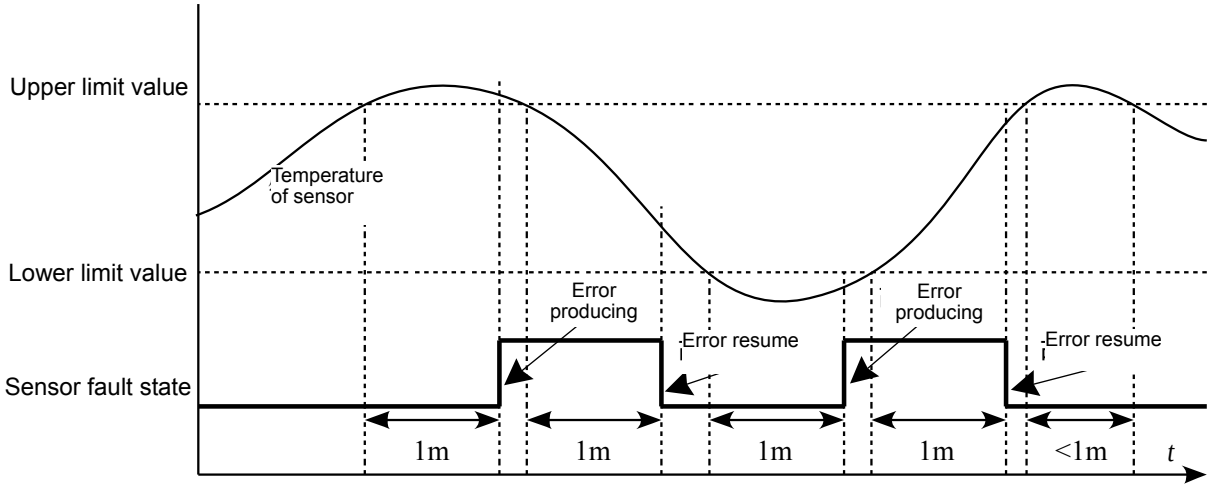
◆ Evaporator temp sensor

When the evaporator temperature is measured lower than -30℃ or higer than 100℃ for one minute continuously,the evaporator temp sensor error signal will be sent (error code: F0), and then indoor unit will stop for abnormity.

When the evaporator temperature sensor is in trouble, the evaporator temperature is measured lower than -30℃ or higer than 100℃ for one minute continuously,, the evaporator temperature sensor error signal will disappear, and the indoor unit will operate as the former state.

◆The measure times should not be accumulatived

Fault Type	Error Code
Indoor ambient temperature sensor error	F0
Indoor tube-inlet sensor error	F1
Indoor tube sensor error	F2
Indoor tube-exit sensor error	F2



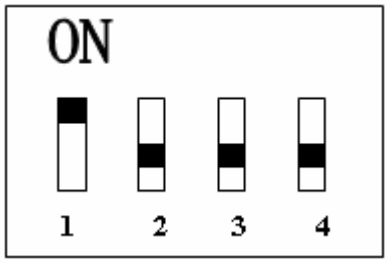
9) Address setting of indoor unit

Indoor unit at the same units must have exclusive address to operate, so you should set the address when installing the indoor unit.

The address of indoor unit at the same units is not allowed to repeat.

The address of the same indoor unit should conform to the address of remote controller.

The address setting of indoor unit and remote controller should use address DIP switch, which is set on the mainboard of indoor unit and remote control, and has the sign of “address”.



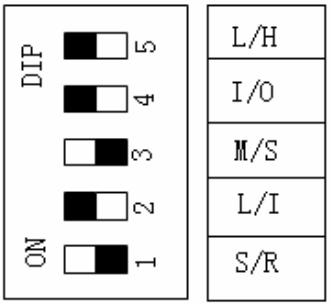
The address which DIP switch refers to is listed as follows.

Dial-up code table (4 positions DIP switch)									
Position 4	Position 3	Position 2	Position 1	Address	Position 4	Position 3	Position 2	Position 1	Address
ON	ON	ON	ON	1	OFF	ON	ON	ON	9
ON	ON	ON	OFF	2	OFF	ON	ON	OFF	10
ON	ON	OFF	ON	3	OFF	ON	OFF	ON	11
ON	ON	OFF	OFF	4	OFF	ON	OFF	OFF	12
ON	OFF	ON	ON	5	OFF	OFF	ON	ON	13
ON	OFF	ON	OFF	6	OFF	OFF	ON	OFF	14
ON	OFF	OFF	ON	7	OFF	OFF	OFF	ON	15
ON	OFF	OFF	OFF	8	OFF	OFF	OFF	OFF	16

10) Function Code Setting

☆ Before power on of the main board, 4-bit dial switch must be set to decide running status of indoor unit.

☆ Function description is as below:



DIP swicth silk print	Functional Description	Dialing on	Dialing off
1（S / R）	**Selecting of memory mode: A. Electrifying renew mode and electrifying standby mode select; B. This function is effective without wired controller.**	**Electrifying standby**	**Electrifying renew**
2（L / I）	**Selecting of wired controller and receiver head A. If you select wired controller the function of receiver head will be shield; B. If you select receiver head the wired controller can not work.**	**Selected wired controller**	**Selected receiver head**
3（M / S）	**Setting of master / slave indoor unit: A. To slove the problem of mode conflict; B. This function will be effective when controlled without wired controller.**	**Master indoor unit**	**Slave indoor unit**

4（I / O）	**Selecting of ambient temperature sensor (Only for ducted units):** **A. Selecting of mainboard ambient temperature sensor($T_{Ambient}$ and receiver head temperature sensor($T_{Ambient1}$);** **B. This function will be effective when mainboard controlled without wired controller.**	**Ambient temperature sensor on mainboard is selected**	**Ambient temperature sensor on receiver head is selected**
5（L/H）	Select to choose high E.S.P or low E.S.P fan speed	Select low E.S.P fan speed	Select high E.S.P fan speed

Functional description of master / slave indoor unit:

◆ This function is effective without wired controller. if it has wired controller, the master / slave unit function is operated by wired controller;

◆ The complete unit will judge automatically. it will select the minimum indoor unit address code and minimum pinboard address code as master indoor unit.

◆ Once the indoor unit address is decided, the operation mode of the complete unit will follow the operation mode of the selected unit. For example, if the master indoor unit is in cooling (heating) mode, the outdoor will operate under cooling(heating) mode, and any indoor units which operate under cooling (heating) mode will show mode conflict.

◆ When the master indoor unit meets power failure or is turned off, the unit mode will be treated as the former mode conflict, i.e. the operation mode of the indoor unit mode is the operation mode of the complete unit.

2.3 Control Function of Hydro-box

1）Instant Heating Mode

Two Temp Sensors: There is a temp sensor that is respectively in the upper part and lower part of the water tank. When the setting temperature is higher than both temp sensors for 5 ℃ or above, the hydro-box will enter heating mode; If the setting temperature is higher than the temp sensor in lower part of water tank for 5 ℃ or above, but which can't be met by the temp sensor in upper part, The heating mode will start in 10min.

Single Temp Sensor: if there is only temp sensor in the lower part of water tank, when the setting temperature is higher than lower temp sensor for 5 ℃ or above, the heating mode will be entered.

2）Energy-saving Heat Retaining Mode

Two temp Sensors: when the temp of the lower temp sensor is 2 ℃ higher than the setting temp, heat retaining mode will be entered.

Single Temp Sensor: when the setting temp is equal to the temp of lower temp sensor, heat retaining mode will be entered.

3）Anti-freezing

Once the temp of inlet or outlet temp sensor of Tube in tube is lower than or equal to 3℃, or the temp of water temp sensor is lower than or equal to 5℃, the wired controller of water tank will display "Anti-freezing". At that time, whether it is ON or not, anti-freezing operation will running until temperatures of inlet and outlet temp sensors are higher than or equal to 10℃. If the conditions for quiting anti-freezing can't be met, the outdoor unit will handle this. When such conditons can be met, water heating operation will stop.

4) Breaking off of Waterproof Temp Sensor

When the unit is ON, if temperatures of inlet and outlet temp sensors are 20℃ higher than the temp of water temp sensor after 10min running of water pump, the wired controller will display "FL"(Error code of water temp sensor is also "FL").

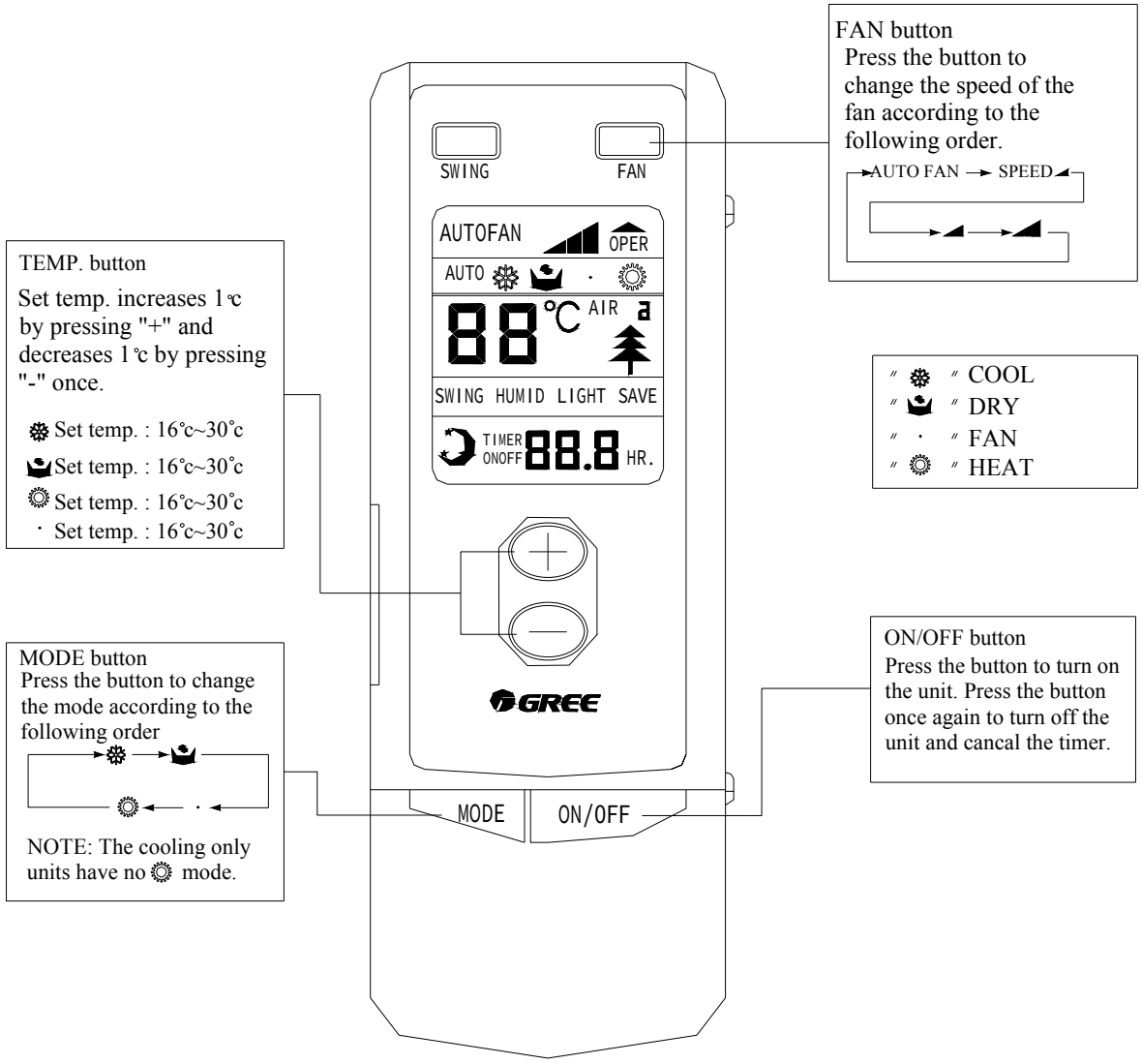
5） Forcible Start of Water Pump

When the unit is OFF, press both buttons "Mode" and "▼"simultaneously for 5s to start this function, which is also the method for turning off this function. The function can last 30 minutes the longest.

3 WIRELESS REMOTE CONTROLLER

NOTE!

① Make sure that there is no obstruction between the remote control and the signal receptor.
② The remote control signal can be received at the distance of up to about 10m.
③ Don't drop or throw the remote control.
④ Don't let any liquid flow into the remote control.
⑤ Don't put the remote control directly under the sunlight or any place where is very hot.

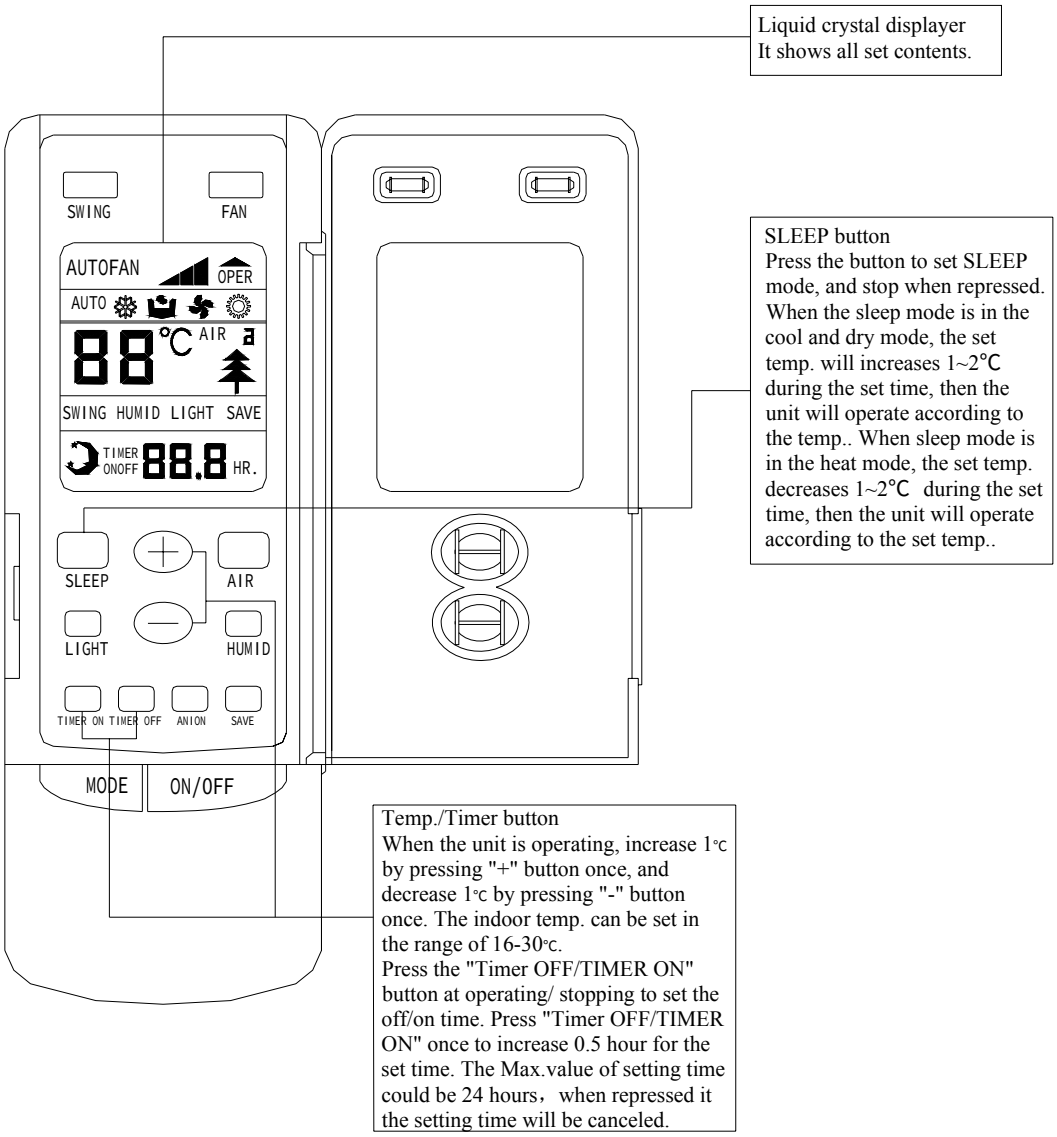

FAN button
Press the button to change the speed of the fan according to the following order.
AUTO FAN → SPEED
TEMP. button
Set temp. increases 1℃ by pressing "+" and decreases 1℃ by pressing "-" once.
Set temp. : 16℃~30℃
Set temp. : 16℃~30℃
Set temp. : 16℃~30℃
Set temp. : 16℃~30℃
〃 COOL
〃 DRY
〃 FAN
〃 HEAT
MODE button
Press the button to change the mode according to the following order
NOTE: The cooling only units have no mode.
ON/OFF button
Press the button to turn on the unit. Press the button once again to turn off the unit and cancal the timer.
SWING
FAN
AUTOFAN
OPER
AUTO
AIR
SWING HUMID LIGHT SAVE
TIMER ONOFF
HR.
MODE
ON/OFF
GREE

NOTE!

After every indoor unit received the turn off signal, the fan and electric inflate valve will continue to work for 20-70mins to make use of the rest cool or rest heat, while for preparation for the nest work. And this is normal phenomenon.

NOTE!

This type of remote control is a kind of general use remote control that is suitable for several types (function) of air conditioner units. Please understand that the functions and buttons that are not suitable for this air conditioner will not be introduced.


Liquid crystal displayer
It shows all set contents.
SLEEP button
Press the button to set SLEEP mode, and stop when repressed. When the sleep mode is in the cool and dry mode, the set temp. will increases 1~2℃ during the set time, then the unit will operate according to the temp.. When sleep mode is in the heat mode, the set temp. decreases 1~2℃ during the set time, then the unit will operate according to the set temp..
SWING
FAN
AUTOFAN
OPER
AUTO
AIR
SWING HUMID LIGHT SAVE
TIMER ONOFF
HR.
SLEEP
AIR
LIGHT
HUMID
TIMER ON
TIMER OFF
ANION
SAVE
MODE
ON/OFF
Temp./Timer button
When the unit is operating, increase 1℃ by pressing "+" button once, and decrease 1℃ by pressing "-" button once. The indoor temp. can be set in the range of 16-30℃.
Press the "Timer OFF/TIMER ON" button at operating/ stopping to set the off/on time. Press "Timer OFF/TIMER ON" once to increase 0.5 hour for the set time. The Max.value of setting time could be 24 hours，when repressed it the setting time will be canceled.

Operation procedure

Normal procedure

1. Press ON/OFF button after connected with the power, then the unit is operating.
2. Press MODE button to choose the need operation mode.
3. Press FAN button to set the fan speed.
4. Press +/- button to set the need temp.

Selectable procedure

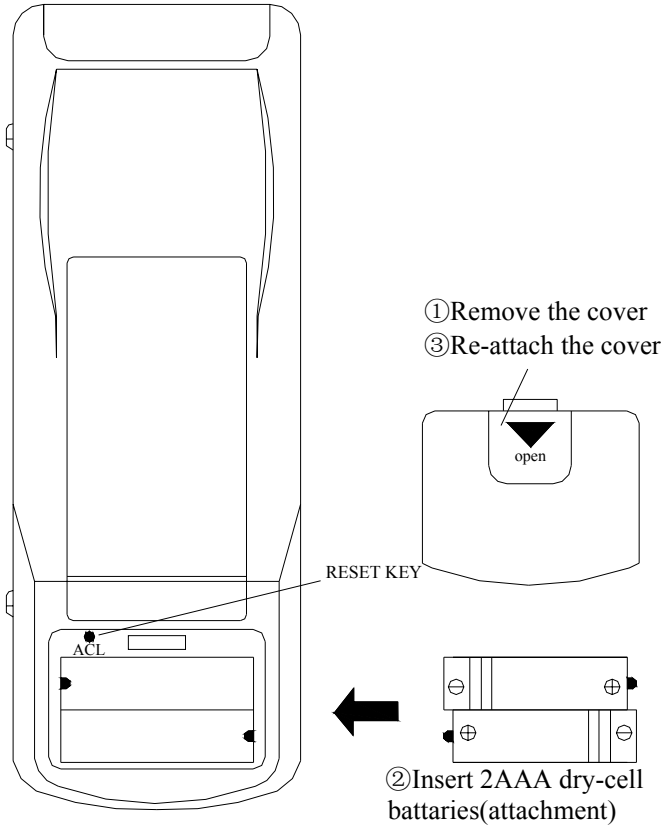
5. Press SLEEP mode to set the sleep state.
6. Press TIMER OFF button to set the set time.

Note: When the operating mode selected by the indoor unit is clash with the one selected by the outdoor unit, the remote controller will display the operating clash after 5 seconds and the power light will flicker, then the indoor unit turns off. At this time, the units will become normal after the operating mode of the indoor unit is changed to cooperate with the outdoor unit. Cool mode can cooperate with dry mode, and fan mode can cooperate with any mode.

How to insert batteries

Two batteries (Two AAA dry-cell batteries) are used by the remote control

1. Remote the cover from the back of the remote control downward, take out the worn batteries and insert two new ones (Make sure the two poles are correct)
2. Re-attach the cover.



1.All the prints and code no. will be showed on the displayer after the insert of batteries. The remote control can be operated after 10sec.
2.The lifetime of the batteries is about one year.
3.Don't confuse the new and worn or different types of batteries.
4.Remove batteries when the remote control is not in use for a longtime to avoid mal-function caused by liquid leakage.
5.The remote control should be placed about 1m or more from the TV set or any other electric appliances.
6.The remote control should be used in the receivable range (the reception range is 10m)
7.When the remote control can not be controlled in the situation of inserted batteries, please remove the back cover and press "ACL" button to make it normal.

4 WIRED CONTROLLER

4.1 wired controller of indoor unit

4.1.1Operation and Display View

Z60151F、Z60351F

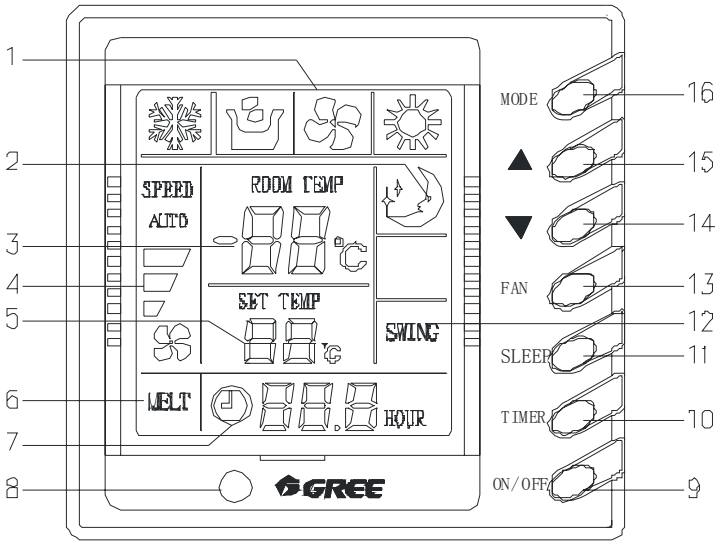


Fig.4.1.1

Various Components of Wired Remote Controller			
1	Operating mode display (Cool, Dry, Fan, Heat)	9	On/Off button
2	Sleep mode display	10	Timer button
3	Environmental temp. display /Malfunction display	11	Sleep button
4	Fan control display (automatic, high, media, low)	12	Swing display
5	Set Temp. display	13	Fan control button
6	Defrosting display	14	Temp./ Timer decrease button
7	Timer display	15	Temp./ Timer increase button
8	Signal receptor	16	Mode button

Z63151F、Z63351F

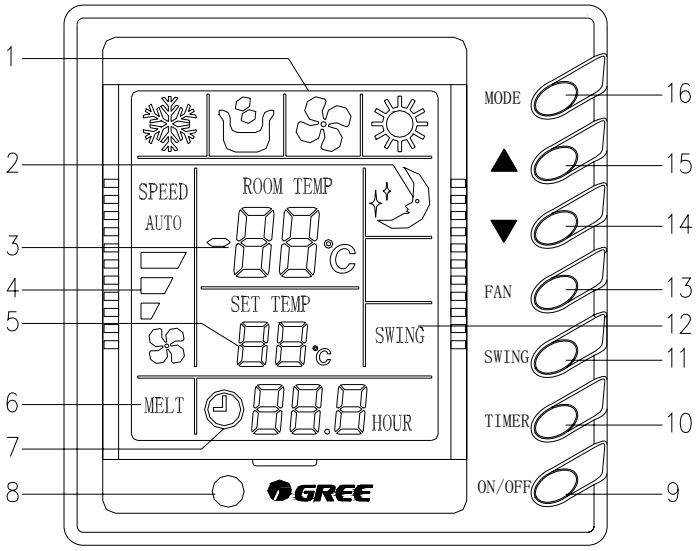
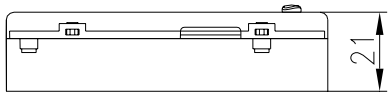


Fig4.1.2

Every part of wired remote controller			
1	Operating mode display (Cool, Dry, Fan, Heat)	9	On/Off button
2	Sleep mode display	10	Timer button
3	Environmental temp.display / Malfunction display	11	Swing button
4	Fan control display (automatic, high, media, low)	12	Swing display
5	Set Temp. display	13	Fan control button
6	Defrosting display	14	Temp. / Timer reducing button
7	Timer display	15	Temp. / Timer rising button
8	Signal receptor	16	Mode button

4.1.2 Dimension



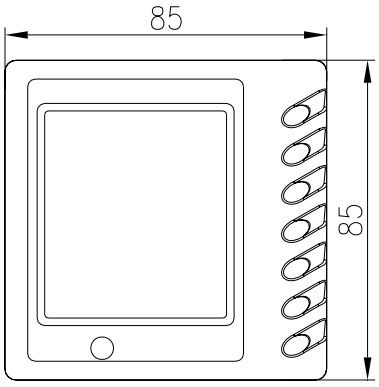


Fig.4.2.1 Outline Dimension

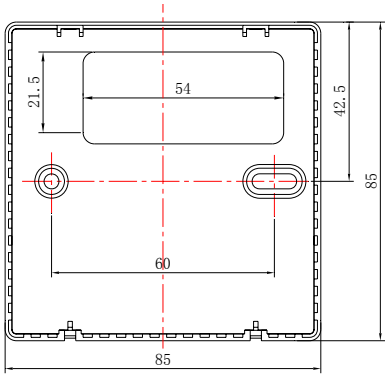


Fig.4.2.2 Installation Dimension

4.1.3 Installation

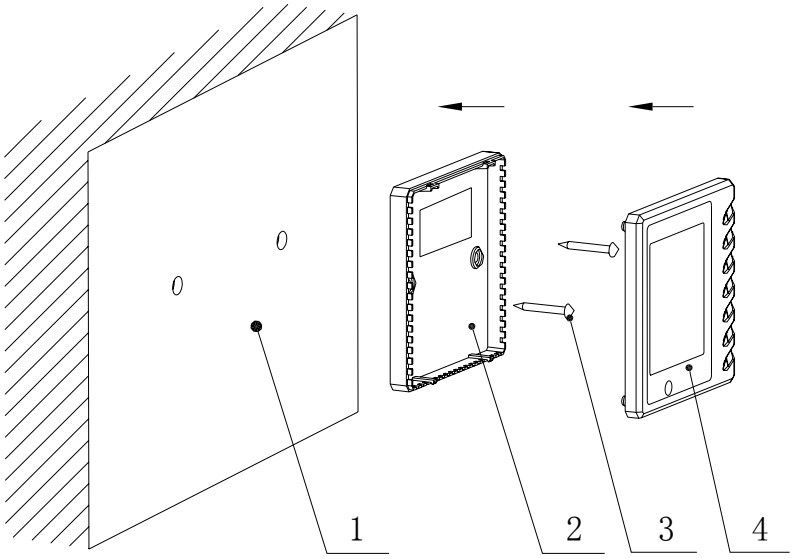


Fig.4.3 Installation of wired controller

SN	1	2	3	4
Name	Casing base, installed into the wall	Controller Soleplate	Screw M4X25	Controller Panel

●Notice for installation under the guidance of Fig.10

1. Cut off power supply before installing the electrical components.It is forbidden to carry out the installation with power on;
2. Get one end of the 4 core communication cable and put it through the rectangular hole on the base board on the wired controller;
3. Hold the base board of controller on the wall, and then fix it to the wall with M4x25 screw;
4. Plug the 4 core communication cable into the slot on the wired controller, and then fix the controller panel with base board together;

4.2 WIRED REMOTE CONTROLLER for Hydro unit

4.2.1 Introduction of Functions

Wired controller shall be used with hydro-box and its main functions are as follows:

☆Mode Setting: There are 4 kinds of modes that are heating,energy-saving, presetting and night

☆Temp Setting Range: 35～58℃（max.setting temp in energy-saving mode is 50 ℃）

☆Manual ON/OFF; Timer ON/OFF;(the timer is clock timer)

☆Current Time Display

☆Clean

☆Fast Water Heating

☆Operational Parameter Inquiry

☆User Parameter Setting

☆Touchable Buttons

⚠ Note

①Don’t install the wire controller in wet environment or where it is exposed under sun

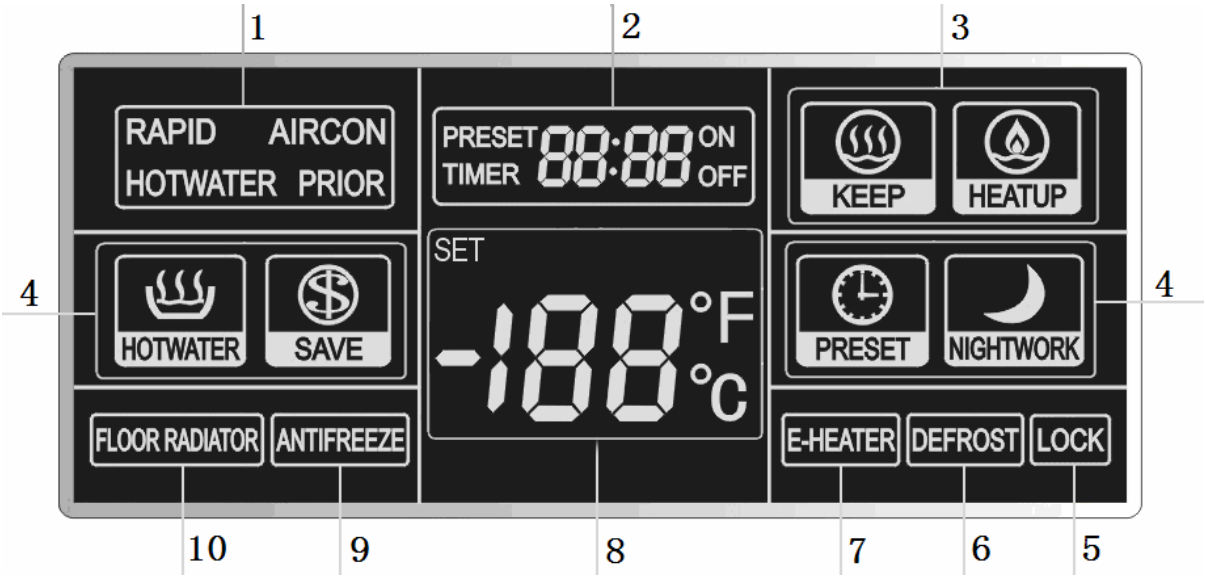
②Don’t knock, throw or frequently disassemble wired controller.

③Don’t operate the wired controller with wet hand.

4.2.2 Control Interface

☆Display of Wired Controller

Applied for RQD5GA-K.RQD8GA-K.:



Graphic Illustration of Wired Controller LCD

No.	Display	Icon	Meaning
1	Quick Heating		Under instant water heating mode, it is allowed to activate the auxiliary electric heating tube to heat the water in a short time
	Hot Water on Priority	--	This function is not provided for this model
	Air Conditioner on Priority	--	This function is not provided for this model
2	System Time		Display the current time
	Timer		Display the AUTO OFF time under instant heating and energy-saving mode. Display the AUTO ON time under OFF state.
	Preset Time		Display the preset water heating time under preset mode.
	Parameter Inquiry		Display the operating parameter code and value under inquiry state
3	Thermal Insulation		Displayed when the temperature is reached or the compressor is not started under ON state.
	Heating		Displayed when the compressor is started

4	Instant Heating Mode		Immediately start water heating function according to preset temperature
	Energy Saving Mode		Immediately start water heating function according to preset temperature, but the upper limit of preset temperature is restricted
	Preset Mode		Preset the water heating time, so that the water heater will be started “N” hours before the preset time.The advance start time “N” is about 0~10hours and it is decided jointly by outdoor ambient temperature outside and correction value of preset advance time, and the start / stop of the compressor is decided according to the difference between preset water temperature and actual water temperature. The water heating process will be stopped 1 hour after the preset time. After started, the machine will run cyclically every day according to the Preset Mode unless the user press button ON/OFF.
	Night Mode		Fix the preset water heating time at 00:00~06:00, so that the water heater will be started in this time section. The start / stop of the compressor is decided according to the difference between preset water temperature and actual water temperature. If exceeding this time section, the water heating process will be stopped. After started, the machine will run cyclically every day according to the Night Mode unless the user press button ON/OFF. If you want a morning shower bath , the Night Mode may be needed ,and then Night Mode is needed by some zones where electricity expense is more cheaper at 00:00~06:00 than other time
5	Lock		Deactivate the key operation, in which case any key will be disabled.
6	Defrost		Display the defrost state of outdoor unit
7	Auxiliary Heating		Display the start / stop of auxiliary electrical heater. When the outdoor unit is failed, the auxiliary heating icon will flash.
8	Water Temp.		Display the water temperature
	Set Temperature		Set the target temperature of water
	Error Code		Display the machine abnormality code

	Parameter Inquiry		By pressing the inquiry key, the wired controller will enter into inquiry, in which case the operating parameter code of the machine is displayed
9	Antifreeze		Display the antifreeze running state of Hydro indoor unit and water tank
10	Floor Heating	--	This function is not provided for this model

Applied for

RQD5GB-K.RQ5GB-K.RQD8GB-K.RQ8GB-K.RQD20LA-M.RQD30LA-M.RQ20LA-K.RQ30LA-K：

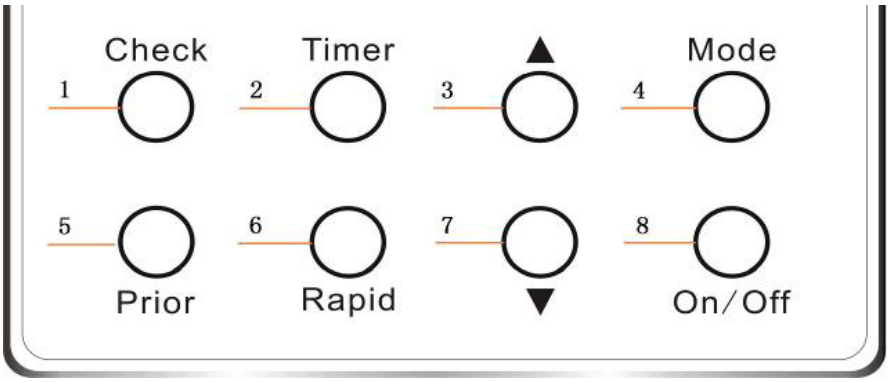
Graphic Illustration of Wired Controller LCD

No.	Display	Icon	Meaning
1	Quick Heating		Under instant water heating mode, it is allowed to activate the auxiliary electric heating tube to heat the water in a short time
2	System Time		Display the current time
	Timer		Display the AUTO OFF time under instant heating and energy-saving mode. Display the AUTO ON time under OFF state.
	Preset Time		Display the preset water heating time under preset mode.
	Parameter Inquiry		Display the operating parameter code and value under inquiry state
3	Thermal Insulation		Displayed when the temperature is reached or the compressor is not started under ON state.
	Heating		Displayed when the compressor is started

4	Instant Heating Mode		Immediately start water heating function according to preset temperature
	Energy Saving Mode		Immediately start water heating function according to preset temperature, but the upper limit of preset temperature is restricted
	Preset Mode		Preset the water heating time, so that the water heater will be started “N” hours before the preset time. The advance start time “N” is decided jointly by environment temperature and correction value of preset advance time, and the start / stop of the compressor is decided according to the difference between preset water temperature and actual water temperature. The water heater will be stopped 1 hour after the preset time. After started, the machine will run cyclically every day.
	Night Mode		Fix the preset water heating time at 00:00~06:00, so that the water heater will be started in this time section. The start / stop of the compressor is decided according to the difference between preset water temperature and actual water temperature. If exceeding this time section, the water heater will be stopped. After started, the machine will run cyclically every day.
5	Lock		Deactivate the key operation, in which case any key will be disabled.
6	Defrost		Display the defrost state of Hydro-box
7	Auxiliary Heating		Display the start / stop of auxiliary electric heating. When the outdoor unit is failed, the auxiliary heating icon will flash.
8	Water Temp.		Display the water temperature
	Set Temperature		Set the target temperature of water
	Error Code		Display the machine abnormality code
	Parameter Inquiry		By pressing the inquiry key, the wired controller will enter into inquiry, in which case the operating parameter code of the machine is displayed
9	Antifreeze		Display the antifreeze state of Hydro -box
10	Floor Heating	--	This function not provided for this model

☆Buttons

Applied for RQD5GA-K.RQD8GA-K:



Key Functions

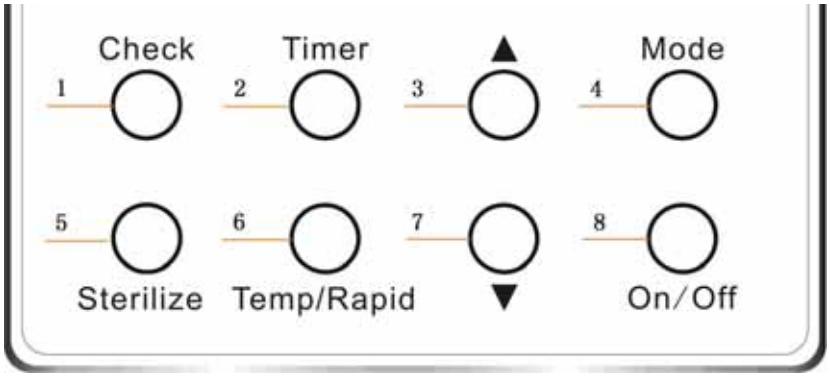
No.	Key Name	Key Functions
1	Check	Press Check key to enter into inquiry state. Press Check key to return to preset temperature and water tank temperature state. Generally, the inquiry function is used by test personnel for inquiry of the machine operating parameters. 1) Under inquiry state, press "+" or "-" key to switch the inquiry code and inquire the corresponding operation code of the machine. 2) When the inquiry code is 00, you may press TIMER key to set the system time.
2	Timer	1) Under OFF state, you may press TIMER key to set the AUTO ON time. 2) Under instant water heating mode and energy saving mode, you may press TIMER key to set the AUTO OFF time. 3) Under preset mode, you may press TIMER key to preset the water heating time. 4) When the inquiry code is 00 under inquiry mode, you may press TIMER key to set the system time.
3	Increase	1) Set the temperature: The range of water temperature default setting is 35～58℃ .The range can be increased to 35～65℃ by setting ,(50℃ for energy saving mode), 2) Setting of Timer, Preset Time and System Time: Range 00:00 ～ 23:59. In addition, the upper limit of water temperature setting is adjustable, but it shall be tested by engineers. For detailed needs, please contact the engineering test personnel. The upper limit may be set to 65℃.
7	Decrease	
4	Mode	Under ON state, you may press MODE key to switch between instant water heating mode, energy saving mode, preset mode and night mode.
5	Priority	This function not provided for this model
6	Rapid	Under instant water heating mode, it is used to start/stop the quick

		water heating function.
8	ON/OFF	Switch on or off the machine
4 Mode and 7 Decrease	Forcing water pump to run	Under OFF state, you may hold down MODE and “-" keys simultaneously for 5 seconds to activate the water pump in Hydro box. If you hold them for 5 seconds again or the machine is failed, the system will exit the function. The ON/OFF key is disabled after the function is started. The function can last 30 minutes the longest.
3 Increase and 7 Decrease	Key Lock	When the machine has no fault, you may hold down “+" and “-“ keys simultaneously for 5 seconds to enter in keypad lock state, in which case the other keys will be disabled. Hold them down again for 5 seconds to exit the lock state. When the machine is incurred to fault, it will automatically release the lock state.

Table 2.1

Appled for RQD5GB-K. RQ5GB-K .RQD8GB-K .RQ8GB-K.

RQD20LA-M. .RQ20LA-K.RQ30LA-K：



Key Functions

No.	Key Name	Key Functions
1	Check	Press Check key to enter into inquiry state. Press Check key to return to preset temperature and water tank temperature state. Generally, the inquiry function is used by test personnel for inquiry of the machine operating parameters. （1）Under inquiry state, press “+” or “-“ key to switch the inquiry code and inquire the corresponding operation code of the machine. （2）When the inquiry code is 00, you may press TIMER key to set the system time.
2	Timer	（1） Under OFF state, you may press TIMER key to set the AUTO ON time. （2） Under instant water heating mode and energy saving mode, you may press TIMER key to set the AUTO OFF time. （3） Under preset mode, you may press TIMER key to preset the water heating time. （4） When the inquiry code is 00 under inquiry mode, you may

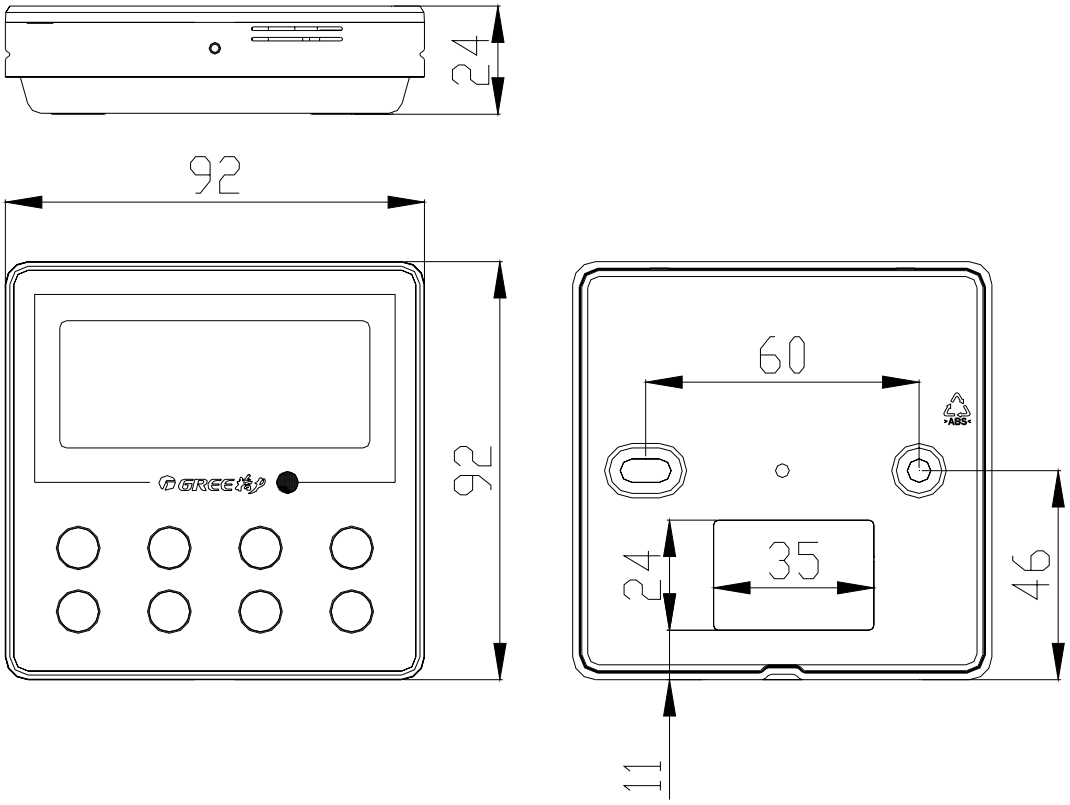
		press TIMER key to set the system time.
3	Increase	（1） Set the temperature: The range of water temperature setting is 35～58℃ (50℃ for energy saving mode). （2） Setting of Timer, Preset Time and System Time: Range 00:00 ～ 23:59. In addition, the upper limit of water temperature setting is adjustable, but it shall be tested by engineers. For detailed needs, please contact the engineering test personnel. The upper limit may be set to 65℃.
7	Decrease	
4	Mode	Under ON state, you may press MODE key to switch between instant water heating mode, energy saving mode, preset mode and night mode.
5	Sterilize	open the sterilizing function in high temperature condition,water temperature set up to 70℃ automatically.
6	Temp/Rapid	Under instant water heating mode, it is used to start/stop the quick water heating function.
8	ON/OFF	Switch on or off the machine
4 Mode and 7 Decrease	Cleaning Function	Under OFF state, you may hold down MODE and “-" keys simultaneously for 5 seconds to activate the cleaning function. If you hold them for 5 seconds again or the machine is failed, the system will exit the cleaning function. The ON/OFF key is disabled after the cleaning function is started. The cleaning function can last 30 minutes the longest.
3 Increase and 7 Decrease	Key Lock	When the machine has no fault, you may hold down “+" and “-“ keys simultaneously for 5 seconds to enter in keypad lock state, in which case the other keys will be disabled. Hold them down again for 5 seconds to exit the lock state. When the machine is incurred to fault, it will automatically release the lock state.

4.2.3 Display

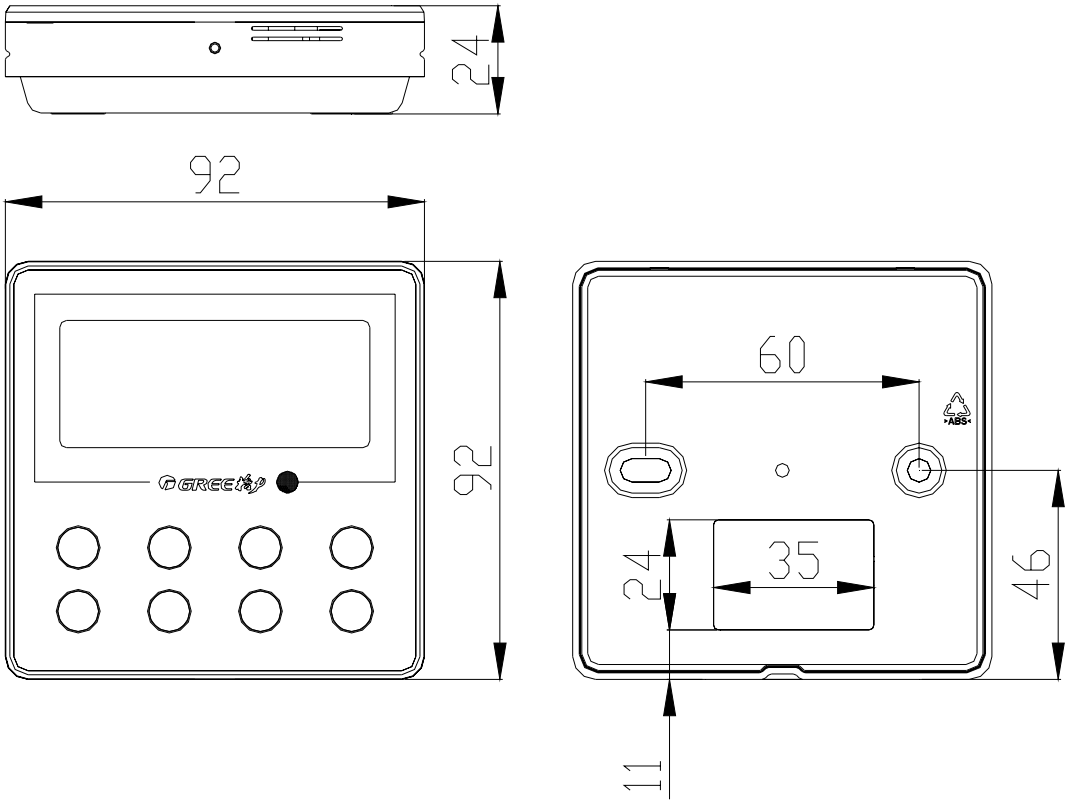
Applied for RQD5GA-K.RQD8GA-K.:

Applied for RQD5GB-K.RQ5GB-K .RQD8GB-K .RQ8GB-K .RQD20LA-M.RQD30LA-M.RQ20LA-K.RQ30LA-K:

4.2.4 Size of Control Device



4.2.5 Installation of Wired Controller



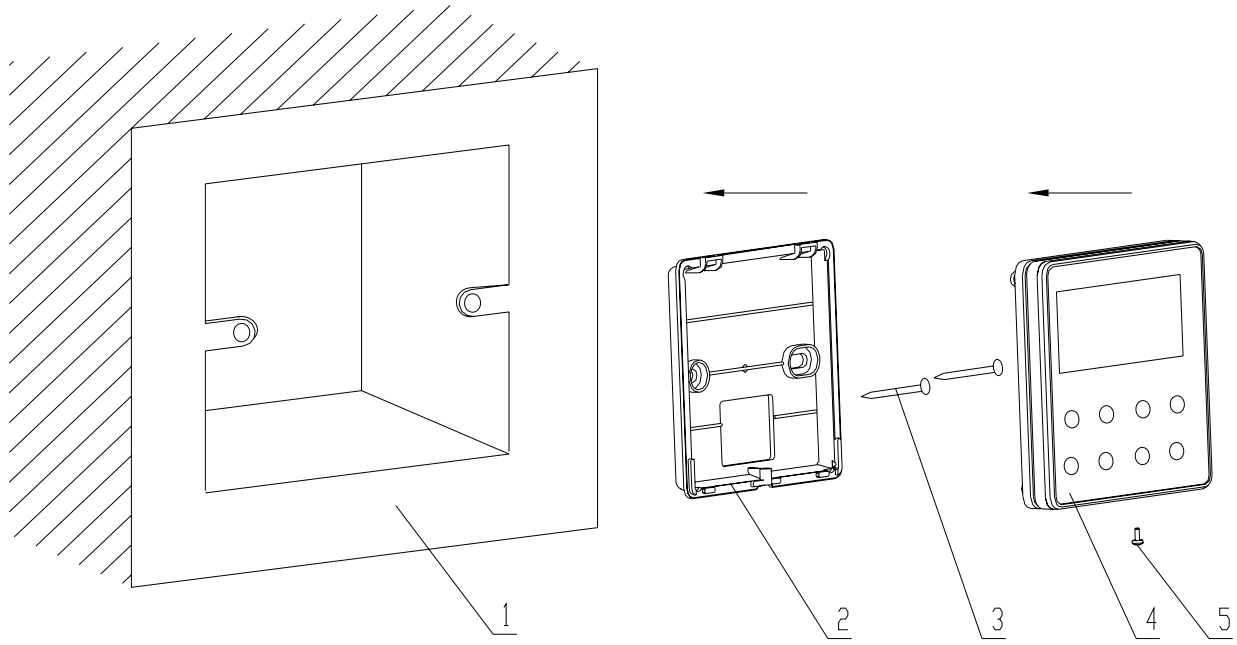


Fig. 3.1 Installation Schematics of Wired Controller

No.	1	2	3	4	5
Name	Socket housing installed in wall	Base plate of controller	Screw M4X25	Control Panel	Screw ST2.2X6.5

Fig. 3.1 illustrates the simple installation process of wired controller. Care shall be taken to the following points:

1. Before installation, firstly cut off the power supply to the cables buried in the mounting hole of wall. Do not operate on live components during the entire installation process.

2. Pull out the 4-cord twisted wire from the mounting hole on wall and insert this wire into square hole behind the base plate of wired controller.

3. Attach the base plate of wired controller onto the wall and fix it to the mounting hole of wall with screws M4X25.

4. Finally, insert the 4-cord twisted wire into the slot on wired controller and clamp the panel of wired controller to the base plate.

⚠ CAUTION:

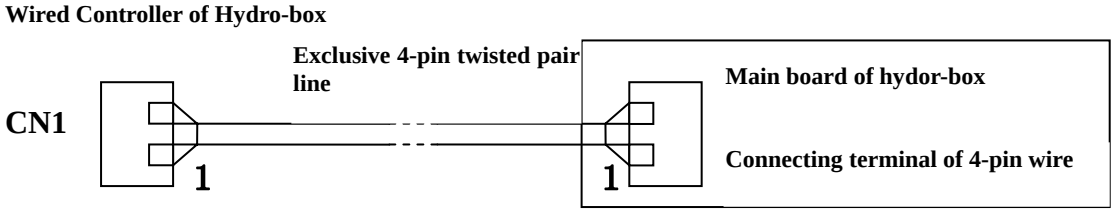
To avoid malfunction of air conditioner due to electromagnetic interference, make sure to take special care when carrying out the following connections:

1. The signal wire and distribution wire (communication) of the wired controller shall be separated from the power cables and indoor / outdoor wires, with minimum spacing higher than 20cm; otherwise the communication of machine might become abnormal.

2. If the air conditioner unit is installed at a place likely subject to electromagnetic interference, the signal wire and distribution wire (communication) of the wired controller must be shielded twisted wire.

4.2.6 Connection of Communication Wire

Connection Diagram



5 FIELD CONTROLLER

5.1 Function

Region monitoring control and region wired control are the two main control functions for region controller.

Region monitoring controller can monitor or control 16 indoor units of a group for inquiry and single or centralized control.

Region wired controller can replace 1-16 selected wired controllers to uniformly set or control the indoor units.

Refer to Fig.1.1, Fig.1.2 about the Sketch map to the relation among the region controller, region monitoring controller and region wired controller.

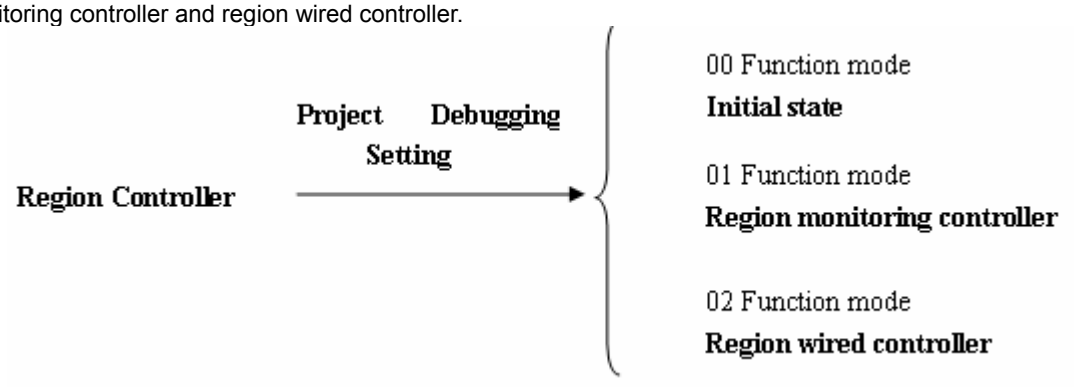


Fig.1.1

Before using, the controller functions must be selected by the personnel who performance the installation with the requirements of users. Please refer to **Project Debugging Setting** section for the details.

Note: If the controller is set to be region wired controller, the wired controller of the selected indoor unit must be removed.

The region controller can be matched with long-distance monitor. As a region monitoring controller, its control is subject to that of the long-distance monitor. In the same group, one of the region controllers can be used as region monitoring controller and matches one or more region wired controller which replace(s) one or more wired controller, in which case, the region monitoring controller can also monitor or control the region wired controller.

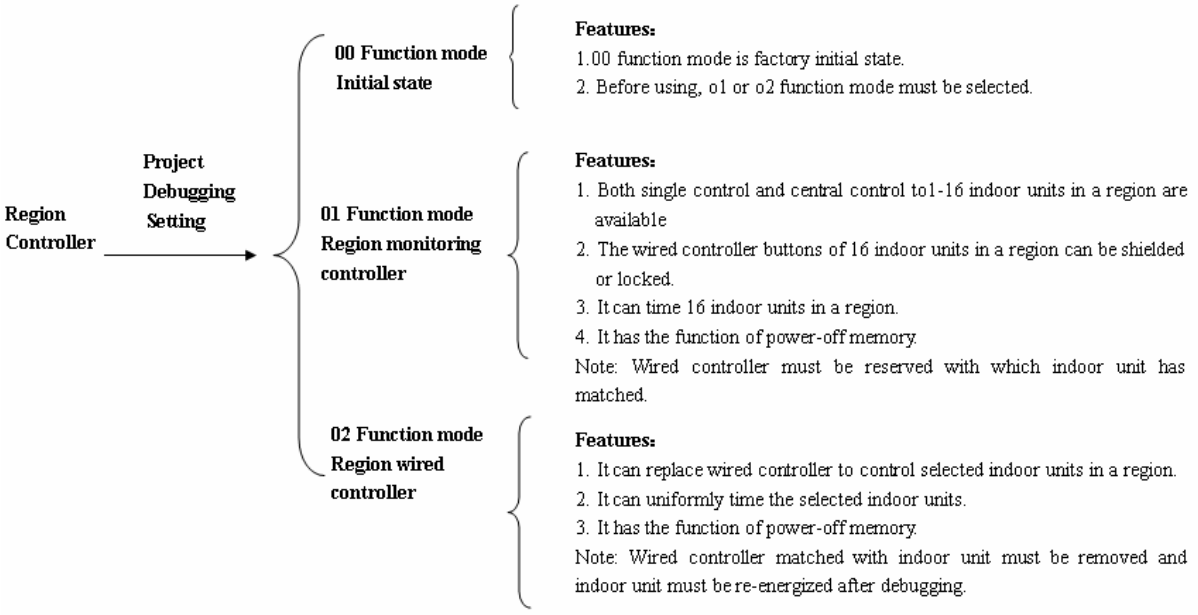
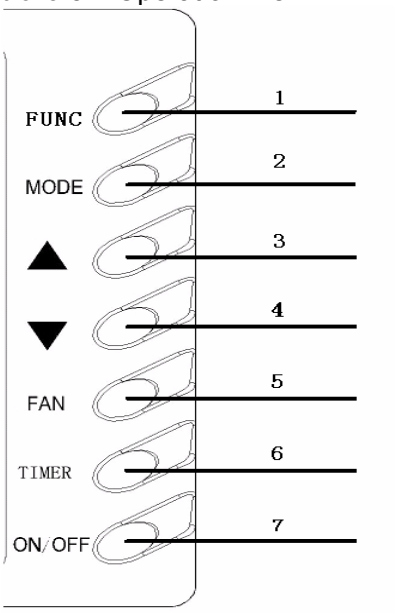

Region Controller
Project Debugging Setting
00 Function mode
Initial state
Features:
1.00 function mode is factory initial state.
2. Before using, o1 or o2 function mode must be selected.
01 Function mode
Region monitoring controller
Features:
1. Both single control and central control to1-16 indoor units in a region are available
2. The wired controller buttons of 16 indoor units in a region can be shielded or locked.
3. It can time 16 indoor units in a region.
4. It has the function of power-off memory.
Note: Wired controller must be reserved with which indoor unit has matched.
02 Function mode
Region wired controller
Features:
1. It can replace wired controller to control selected indoor units in a region.
2. It can uniformly time the selected indoor units.
3. It has the function of power-off memory.
Note: Wired controller matched with indoor unit must be removed and indoor unit must be re-energized after debugging.

Fig.1.2 Sketch map to the relation among the region controller, region monitoring controller and region

wired controller5.2 Operation View

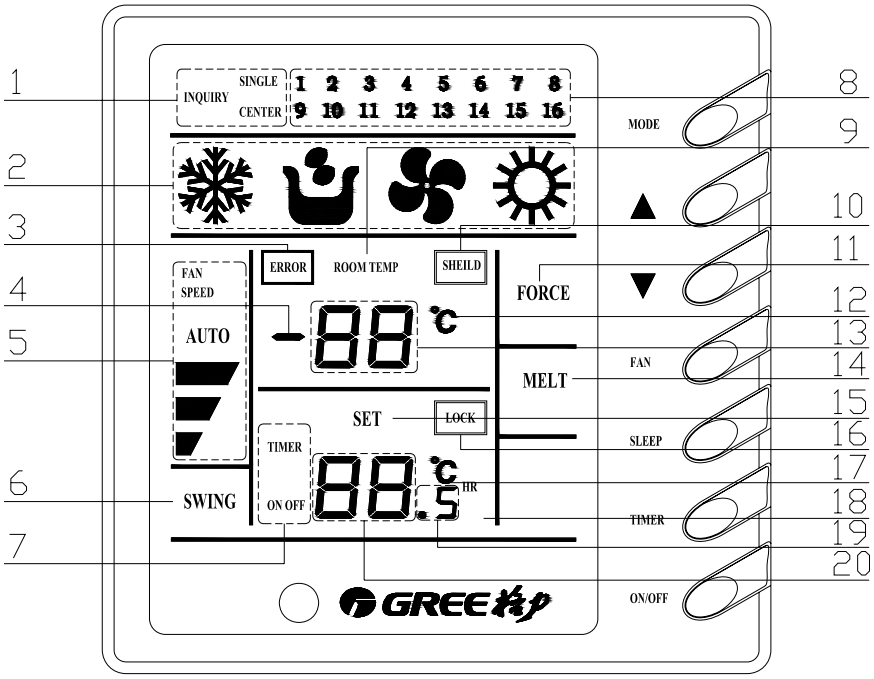


（Fig.5.2）

Instruction to functions of buttons (Table 5.1)

No.	Name	Function
1	FUNC (FUNCTION)	A. Switch the control mode of inquiry/single/ central control. B. In central control status, give the central order by successively pressing FUNC button.
2	MODE	Set cooling/heating/fan/dry mode for indoor unit
3	▲	A. Inquiry status: cycle, increase or decrease No. of indoor units to easily inquire the status of each indoor unit. B. Single/Central control status: set running temp. of indoor unit, maximum is 30°C and minimum is 16°C. C. Timer setting status: increase or decrease the timer on/off time, maximum is 24hr and minimum is 0.
4	▼	
5	FAN	A. Set the indoor fan speed of hi/mid/low/auto. B. Successively press FAN button to set on/off swing.
6	TIMER	A. Under single/central control mode, set on /off timer of selected indoor unit B. Under inquiry status, inquire the timer setting of the indoor unit with current address.
7	ON/OFF	Set ON/OFF of the indoor unit.
2MODE and 7 ON/OFF	Lock	Under single/central control, press MODE and ON/OFF buttons simultaneously to start/ stop the lock of operation to buttons of wired controller for selected indoor units.
2MODE and 6 TIMER	Shield mode	Under single/central control, press MODE and TIMER simultaneously to start/ stop the shield of operation to MODE button of wired controller for selected indoor unit.
4 ▼and 6 TIMER	Shielding Temp.	Under single/central control, press ▼ and TIMER simultaneously to start/ stop the shield of operation to Temp button of wired controller for selected indoor unit.
7 ON/OFF and 6 TIMER	Shielding ON/OFF	Under single/central control, press ON/OFF and TIMER simultaneously to start/ stop the shield of operation to ON/OFF button of wired controller for selected indoor unit.
2 MODE and 3 ▲	Memory mode	Refer to **power-off memory function** about the details.
4 ▼and 7 ON/OFF	Selection of function	A. Check the control mode of region monitoring controller / region wired controller B. Set the control mode of region monitoring controller / region wired controller
Note: ① The characters with gray back ground indicate buttons. Following part is the same to it. ② The time of single press of the button is more than 3s, which means successively-press. ③ There isn't the function that the region wired controller shields other indoor wired controller.		

5.3 Display View



(Fig.5.3)

No.	Display name	Instruction to display
1	Control mode	Inquiry state, “INQUIRY” is displayed. Single control state,”SINGLE” is displayed. Centralized control state, “CENTER” is displayed.
2	Running mode	Each indoor unit running mode is displayed.
3	Error	“ERROR” is displayed during any malfunction to indoor or outdoor unit in a group.
4	—	“— “ is displayed when there is no malfunction to selected indoor unit and the ambient temp. is below zero.
5	Fan speed display	Hi, mid, low or auto speed of indoor fan is displayed.
6	Swing	Swing running of indoor unit is displayed.
7	Timer	“TIMER ON/OFF” is displayed when setting timer or inquiring timer state.
8	No. of indoor unit	Under inquiry state, No. of online indoor units are displayed and No. of selected indoor unit will blink. Under single control state, only No. of selected indoor unit is displayed. Under centralized state, No. of all online indoor units are displayed.
9	Room temp.	“ROOMTEMP” is displayed for no malfunction, but isn’t for malfunction.
10	Shield	Centralized controller A. Under inquiry state,” SHIELD” will be displayed when selected indoor unit is shielded. B. Under control state,” SHIELD” will be displayed during setting or giving the shield order. Region wired controller:” SHIELD” will be displayed when selected units are shielded during long-distance monitoring.
11	Force	“FORCE” is displayed when indoor unit is forced to run.
12	℃ (room temp.)	“ ℃” is displayed when there is no malfunction.
13	Room temp. or error code	Room temp. value is displayed during no malfunction to selected indoor or outdoor unit. Error code is displayed during malfunction to selected indoor or outdoor unit.
14	Melt	“Melt” is displayed during defrosting.
15	Lock	Region monitoring controller A: Inquiry state: “LOCK” is displayed when selected indoor unit is locked. B: Control state: “LOCK” is displayed during setting or giving the lock order. Region wired controller: “LOCK” is displayed when selected unit is locked in long-distance monitoring.

16	Set	"SET" blinks when the unit is on and commanded. "SET" is displayed when the unit is on without command.
17	℃ (set temp.)	Set temp. value is displayed when the selected indoor unit is on and not in timer inquiry or setting status.
18	HR (hour)	"HR" is displayed during timer inquiry or setting.
19	.5	".5" is displayed when the timer time value includes 0.5 hr and the unit is during timer inquiry or setting.
20	Setting temp. and timer time	During timer inquiry, integer of setting time of timer is displayed. During timer setting, integer of setting time of timer is displayed. Set temp. value is displayed when the unit is not during timer inquiry or setting.

Note:
① Contents in the double quotation marks indicate the display in LCD. Following part is the same to it.
② Online indoor units to Mini Centralized Controller indicate that in a region. Following part is the same to it.
③ No signal control function for region wired controller, and "SINGLE" won't be displayed either.

5.4 Connection Between Region Controller and the Unit

Insert the 4-core twisted pair line to wired controller, if which is with the indoor unit, into region controller wiring terminal CN1 (or CN2), and then connect the other wiring terminal CN2 (or CN1) with the main board of indoor unit.
If there is no wired controller with indoor unit, introduce a 4-core twisted pair line to indoor unit main board and connect it with region controller wiring terminal CN1 (or CN2).
Note：Any main board of the indoor unit controlled by the region controller can be connected. If the region controller is used as a region wired controller, wired controller with the indoor unit must be removed.

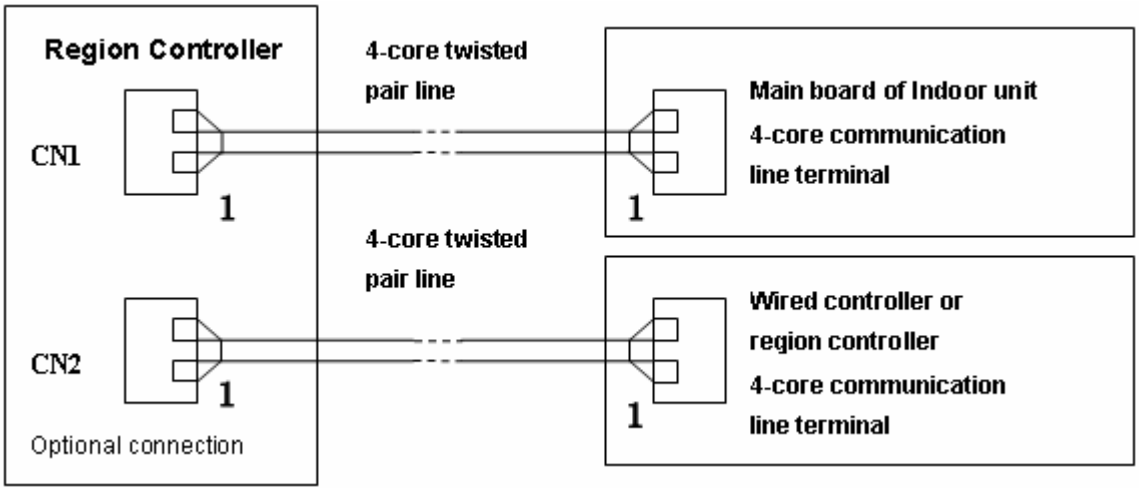


Fig2.1 Power cords and communication lines for region controller

Before installation and connection, make sure the power supply is off. After installation and connection, check the connection result again to prevent loose or short.
There are 4 connection lines (included in the 4-core twisted pair line) to the controller, from CN1 or the upper and right CN2 to the upper they respectively are: Ground line (GND), communication line A (A), communication line B(B) and power cord (+12 v).

Note:
During following connection of wirings, pay special attention to them to avoid malfunction to units for electromagnetic interference.
① Keep the signal lines or wirings (communication) of region controller or wired controller at least 20 cm from the power cords or connecting lines between indoors and outdoors to prevent abnormal communication.
② Shielding twisted pair line must be adopted as signal line or wiring (communication) once the unit is installed in the place where there is serious electromagnetic interference.

6 CENTRALIZED CONTROLLER

6.1 Function

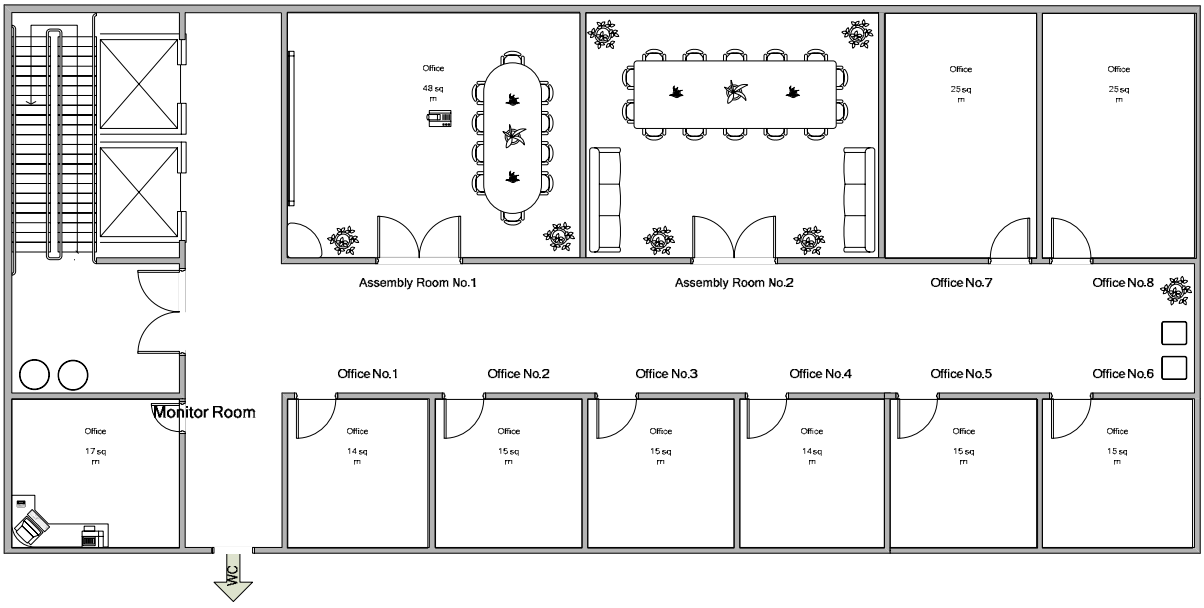
Main characteristics of Centralized Controller:

- A set of Centralized Controller can control 64 communication modules and can connect to as much as 1024 indoor units. It can conduct individual control with any separated area or unified control. It can monitor or control On/Off, Mode, Temperature setting and Timer On/Off of indoor unit etc.
- It can realize the central, single or select control to all indoor units.
- It can organize several indoor units into groups as you desired and conduct unified control—Group select control.

Error contents are shown by codes. Corresponding communication module numbers of the indoor units with error contents would blink for rapid inspection and repair (T

6.2 Case Study

Take one floor of an office building for example to illustrate wiring and debugging of the centralized control system. In this floor, there are 2 assembly rooms, 8 offices and 1 monitor room. Refer to the following illustration for its plane structure.



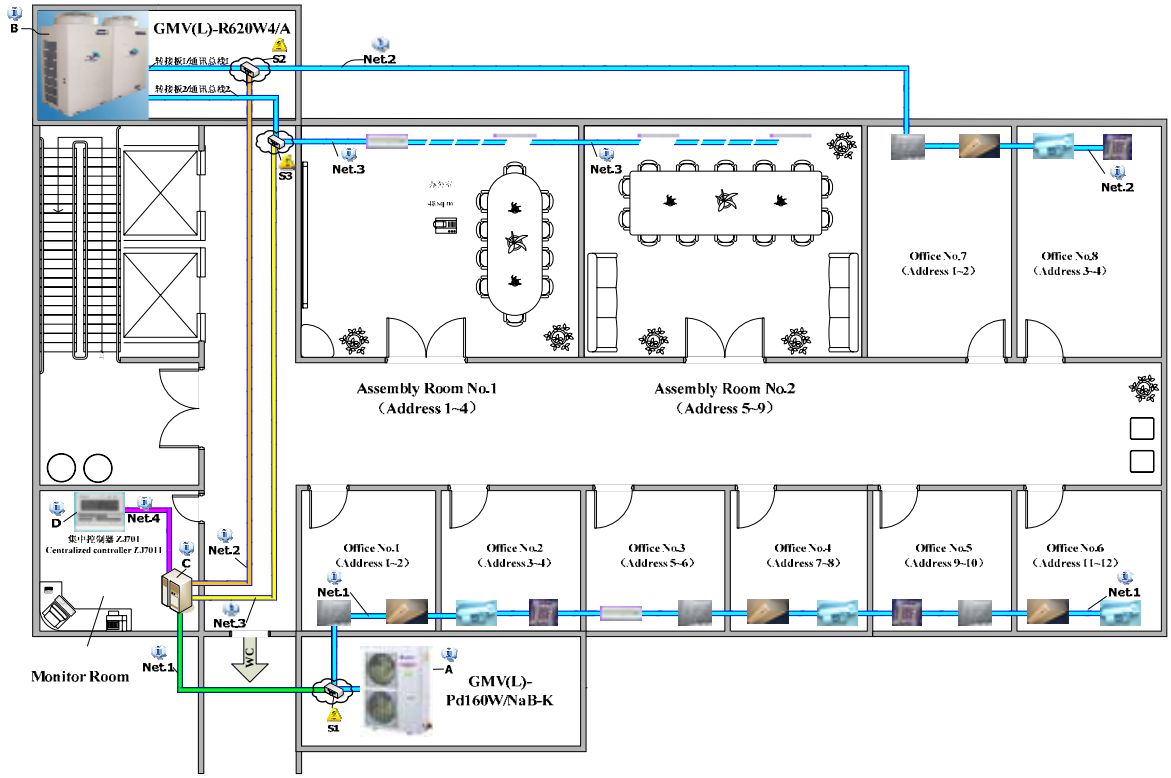
1）Instruction to Distribution of Unit and Installation of Equipment

This office building has been installed with 2 sets of GMV units, as shown in the table below.

Name	Models	Quantity of required communication modules (pinboard)	Quantity of indoor units	Corresponding rooms of indoor units		
				Room	**Address of communication module**	**Address of indoor unit**
Unit1	GMV(L)-Pd160W/NaB-K	1（0）	12	Office 1	01	1，2
				Office 2		3，4
				Office 3		5，6
				Office 4		7，8
				Office 5		9，10
				Office 6		11，12
Unit 2	GMV-R620W4/D	2（2）	20	**Room**	**Address of communication module**	**Address of indoor unit**
				Office 7	02	1,2
				Office 8		3,4

				Assembly room 1	03	1，2，3，4
				Assembly room 2		5，6，7，8

2）Frame Diagram of System Net

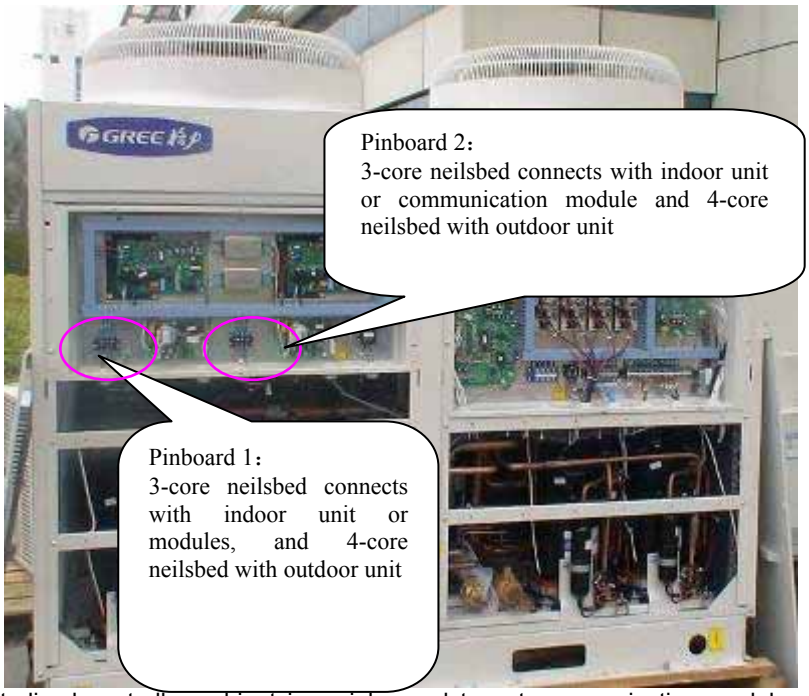


Instruction to Frame Diagram of System Net

Mark A: Outdoor Unit GMV(L)-Pd160W/NaB-K can be connected with up to 16 indoor units. In this project, this outdoor unit is connected with the communication module with address of 01 and indoor units (address 01~12）of office 1-6, corresponding with independent communication **Net.2**. The mainboard of outdoor unit is as follow:

Mark B: Outdoor Unit GMV（L）-R620W4/A can be connected with up to 32 indoor units by two pinboards ,either of which can connect with up to 16 indoor units . What's more, the quantity of communication modules used is the same as that of pinboards.

In this project, pinboard 1 is connected with the communication module with address of 02 and indoor units (address 01~04）of office 7-8, corresponding with independent communication **Net.2.** Pinboard 2 is connected with communication module of address 03 and indoor units (address 01~08）of office 1-2, corresponding with independent communication **Net.3**. The outdoor figure is as follow:


Pinboard 2：
3-core neilsbed connects with indoor unit or communication module and 4-core neilsbed with outdoor unit
Pinboard 1：
3-core neilsbed connects with indoor unit or modules, and 4-core neilsbed with outdoor unit

Mark C: Centralized controller cabinet is mainly used to put communication modules together. Refer to Section 3 Instruction to Installation Procedure of System about its figure and connection method of communication modules.

Mark D: Centralized Controller ZJ701. For the first use of it, address mapping setting must be made to specify addresses of communication modules which should be controlled. In this project example there are 3 communication modules with the address of 01, 02 and 03 which are displayed in the centralized controller correspondingly.

Mark S1, S2, and S3: Telephone 3-way triple adapters are used to connect communication modules with communicating net of indoor and outdoor units. Refer to Section 3 Instruction to Installation Procedure of System for its connection method.

3）Instruction to Installation Procedure of System

- **Step 1: Integral Design of the Whole System.**

In consideration of features of building and installation of the unit, the building is divided into a lot of monitoring regions and then confirm required systems, their quantity and installation locations. As for this example:

A. Division of monitoring regions: According to needs of the users, the whole floor is divided into 3 monitoring regions, south area (office 1-6), north area (assembly room1-2 and office 7-8) and monitor room.

B. Confirmation of quantity of systems

Name	Qty	Installation Location	Notes
Communication modules	3	Centralized control cabinet	The quantity required for the pinboards is the same as communication modules. If no pinboard, only one module is needed. So, there should be 3 modules in total.
Centralized control cabinet	1	Monitor room	Installed indoors according to user's conditions.
Centralized controller	1	Monitor room	Installed indoors

- **Step 2: Wiring and Installation**

A. Centralized controller as extension function of GMV unit can be installed and debugged after communication connection between outdoor unit and indoor unit and normal operation of the unit.

B. Make of centralized control cabinet

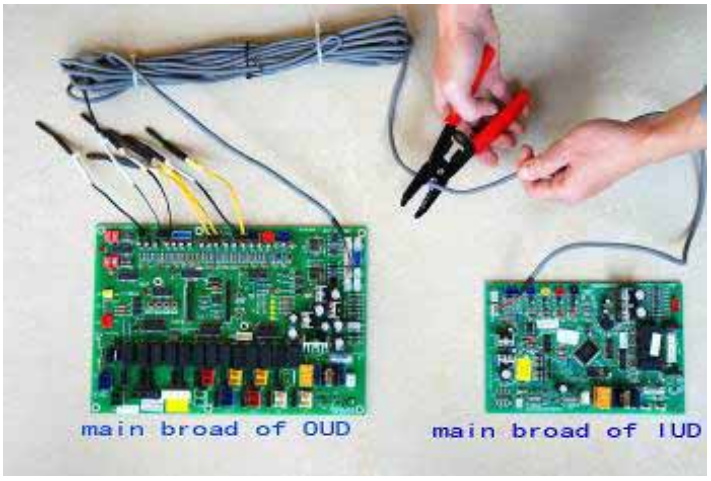
If a lot of communication modules are used, centralized control cabinet is recommended. Heavy current wires and communication lines should be wired separately. The distance between them should keep above 15cm.The following figure is an example of centralized control cabinet, but its design should be according to quantity of communication modules.

C. Connection of communication modules

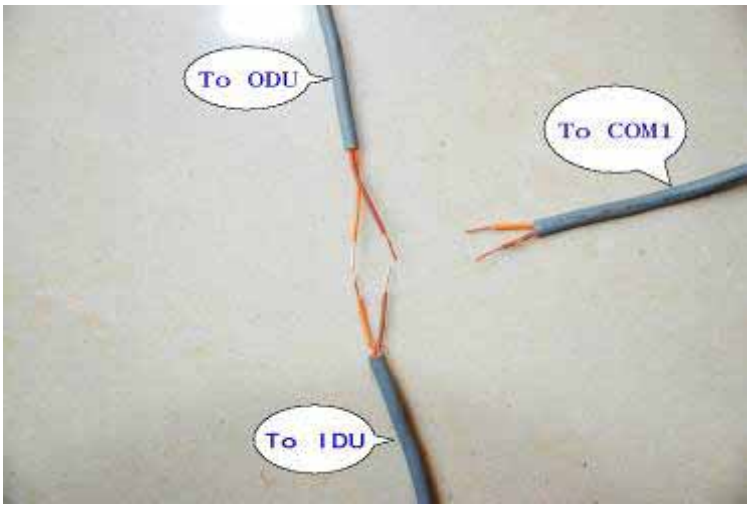
COM 1 of communication module can connect with indoor and outdoor unit. The two COM2 can connect with other communication module or centralized controller. As shown in the following figure:

D. Connection between communication module and indoor and outdoor units

According to the net diagram, connect the communication line between indoor unit and outdoor unit. Then cut off the communication line between the mainboards of indoor unit and outdoor unit, as shown below.



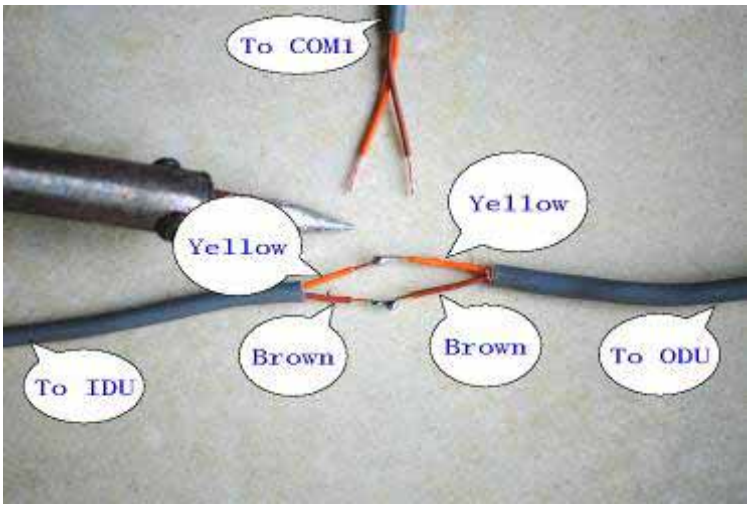
Align the cutting terminals and terminals of communication line to COM1, as shown below:



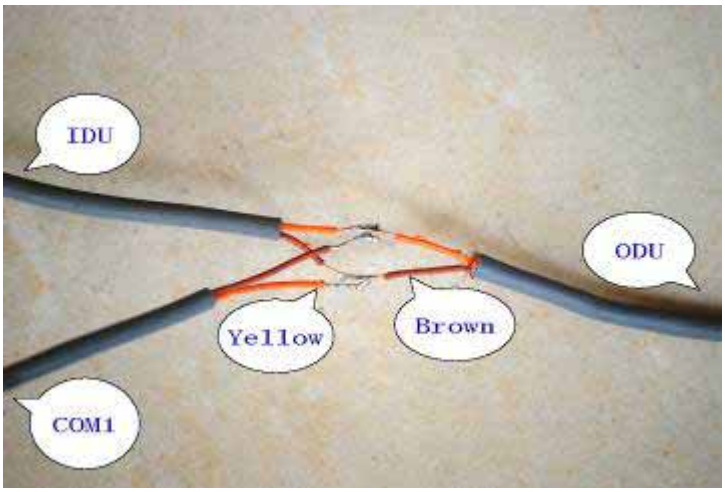
In this case, there are two methods to connection of them.

Method 1: Welding

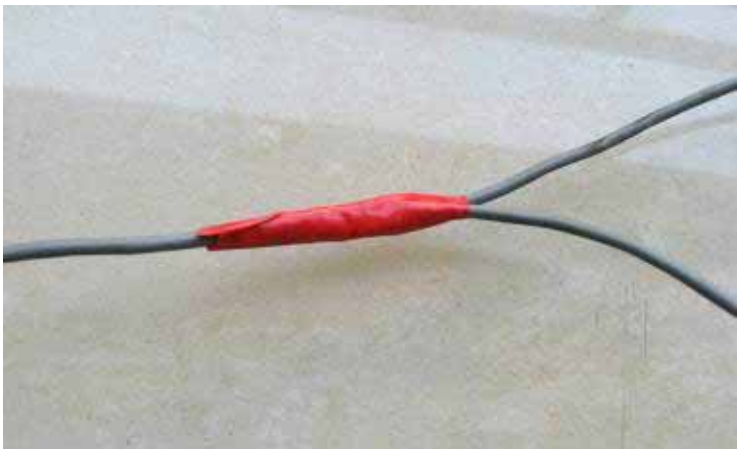
Weld the two cutting terminals by yellow to yellow and brown to brown, as shown below:



And then weld the terminals of communication line to COM1 with the welding spots in the above figure together by **yellow wire to brown wire**, as shown below:

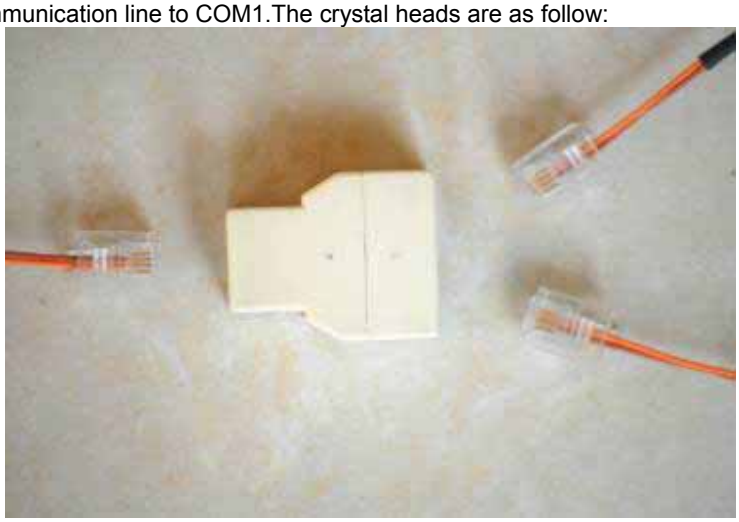


At last, wrap the welding spots with insulating tape and test conduction performance of the three communication lines, as shown below:

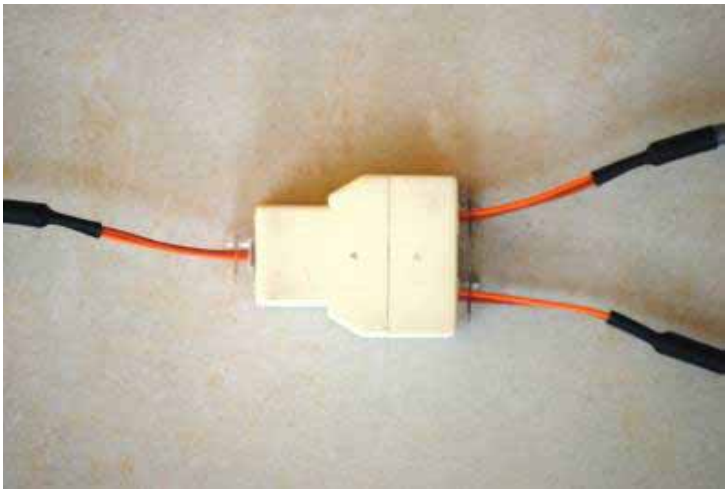


Method 2: Triple adapter

Make crystal heads for the three lines. The connection direction should be the sameas in the above welding figures, i.e. yellow to yellow and brown to brown wire of indoor and outdoor units, but yellow to brown wire of communication line to COM1.The crystal heads are as follow:

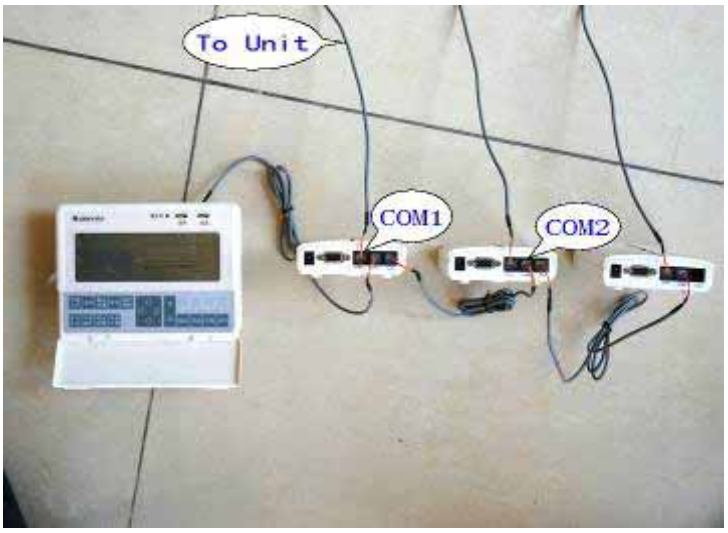


Insert the three crystal heads into the triple adopter and test conduction performance of them, as shown below:



E. Connection of Communication Modules and Centralized Controller

Connection of COM1 of communication module which has 3 COM in total has been introduced as the above. COM2 can connect with another communication module or centralized controller, as shown below:



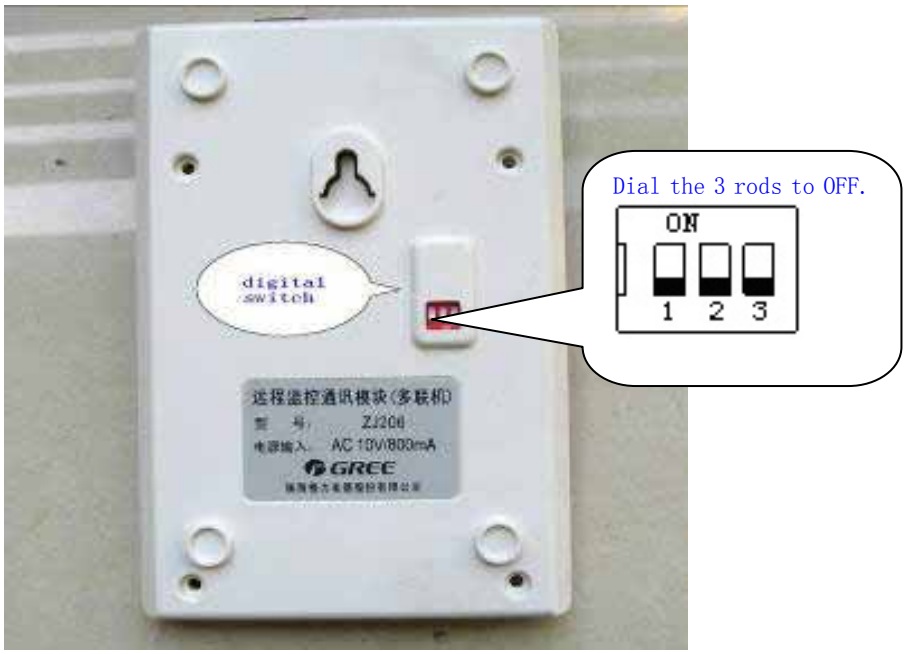
Note: The above figure is only for reference to relation among the equipments. The actual wiring is subject to the above frame diagram of system

•Step 3: There are two methods of DIP address setting of communication module

Method 1: The address of each communication module has been fixed in the factory and marked on the label at the back of it. It is unnecessary for users to set anything. In addition, the 3-digital DIP can not be dialed to OFF completely, as shown below:

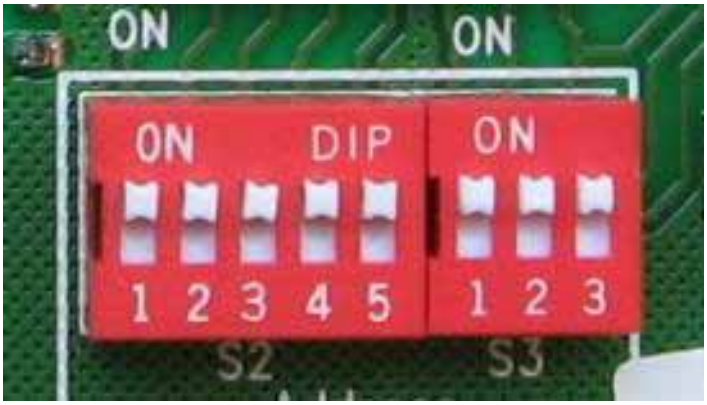
Method 2: Manual setting of address, as operated the following:

1. Dial the digital switch at the back of communication module to OFF completely, as below:



2.Open the cover of communication module as below:

The 8-digital DIP is as below:



Set DIP for address according to the following table.

Address from 0 to 31								Address	Address from 32 to 63								Address
DIP S2					DIP S3				DIP S2					DIP S3			
1	2	3	4	5	1	2	3		1	2	3	4	5	1	2	3	
0	0	0	0	0	0	0	0	**0**	0	0	0	0	0	1	0	0	**32**
1	0	0	0	0	0	0	0	**1**	1	0	0	0	0	1	0	0	**33**
0	1	0	0	0	0	0	0	**2**	0	1	0	0	0	1	0	0	**34**
1	1	0	0	0	0	0	0	**3**	1	1	0	0	0	1	0	0	**35**
0	0	1	0	0	0	0	0	**4**	0	0	1	0	0	1	0	0	**36**
1	0	1	0	0	0	0	0	**5**	1	0	1	0	0	1	0	0	**37**
0	1	1	0	0	0	0	0	**6**	0	1	1	0	0	1	0	0	**38**
1	1	1	0	0	0	0	0	**7**	1	1	1	0	0	1	0	0	**39**
0	0	0	1	0	0	0	0	**8**	0	0	0	1	0	1	0	0	**40**
1	0	0	1	0	0	0	0	**9**	1	0	0	1	0	1	0	0	**41**
0	1	0	1	0	0	0	0	**10**	0	1	0	1	0	1	0	0	**42**
1	1	0	1	0	0	0	0	**11**	1	1	0	1	0	1	0	0	**43**
0	0	1	1	0	0	0	0	**12**	0	0	1	1	0	1	0	0	**44**
1	0	1	1	0	0	0	0	**13**	1	0	1	1	0	1	0	0	**45**
0	1	1	1	0	0	0	0	**14**	0	1	1	1	0	1	0	0	**46**
1	1	1	1	0	0	0	0	**15**	1	1	1	1	0	1	0	0	**47**
0	0	0	0	1	0	0	0	**16**	0	0	0	0	1	1	0	0	**48**
1	0	0	0	1	0	0	0	**17**	1	0	0	0	1	1	0	0	**49**
0	1	0	0	1	0	0	0	**18**	0	1	0	0	1	1	0	0	**50**
1	1	0	0	1	0	0	0	**19**	1	1	0	0	1	1	0	0	**51**
0	0	1	0	1	0	0	0	**20**	0	0	1	0	1	1	0	0	**52**
1	0	1	0	1	0	0	0	**21**	1	0	1	0	1	1	0	0	**53**
0	1	1	0	1	0	0	0	**22**	0	1	1	0	1	1	0	0	**54**
1	1	1	0	1	0	0	0	**23**	1	1	1	0	1	1	0	0	**55**
0	0	0	1	1	0	0	0	**24**	0	0	0	1	1	1	0	0	**56**
1	0	0	1	1	0	0	0	**25**	1	0	0	1	1	1	0	0	**57**
0	1	0	1	1	0	0	0	**26**	0	1	0	1	1	1	0	0	**58**
1	1	0	1	1	0	0	0	**27**	1	1	0	1	1	1	0	0	**59**
0	0	1	1	1	0	0	0	**28**	0	0	1	1	1	1	0	0	**60**
1	0	1	1	1	0	0	0	**29**	1	0	1	1	1	1	0	0	**61**
0	1	1	1	1	0	0	0	**30**	0	1	1	1	1	1	0	0	**62**
1	1	1	1	1	0	0	0	**31**	1	1	1	1	1	1	0	0	**63**

Address from 64 to 95								Address	Address from 96 to 127								Address
DIP S2					DIP S3				DIP S2					DIP S3			
1	2	3	4	5	1	2	3		1	2	3	4	5	1	2	3	
0	0	0	0	0	0	1	0	**64**	0	0	0	0	0	1	1	0	**96**
1	0	0	0	0	0	1	0	**65**	1	0	0	0	0	1	1	0	**97**
0	1	0	0	0	0	1	0	**66**	0	1	0	0	0	1	1	0	**98**
1	1	0	0	0	0	1	0	**67**	1	1	0	0	0	1	1	0	**99**
0	0	1	0	0	0	1	0	**68**	0	0	1	0	0	1	1	0	**100**
1	0	1	0	0	0	1	0	**69**	1	0	1	0	0	1	1	0	**101**
0	1	1	0	0	0	1	0	**70**	0	1	1	0	0	1	1	0	**102**
1	1	1	0	0	0	1	0	**71**	1	1	1	0	0	1	1	0	**103**
0	0	0	1	0	0	1	0	**72**	0	0	0	1	0	1	1	0	**104**
1	0	0	1	0	0	1	0	**73**	1	0	0	1	0	1	1	0	**105**
0	1	0	1	0	0	1	0	**74**	0	1	0	1	0	1	1	0	**106**
1	1	0	1	0	0	1	0	**75**	1	1	0	1	0	1	1	0	**107**
0	0	1	1	0	0	1	0	**76**	0	0	1	1	0	1	1	0	**108**
1	0	1	1	0	0	1	0	**77**	1	0	1	1	0	1	1	0	**109**
0	1	1	1	0	0	1	0	**78**	0	1	1	1	0	1	1	0	**110**
1	1	1	1	0	0	1	0	**79**	1	1	1	1	0	1	1	0	**111**
0	0	0	0	1	0	1	0	**80**	0	0	0	0	1	1	1	0	**112**
1	0	0	0	1	0	1	0	**81**	1	0	0	0	1	1	1	0	**113**
0	1	0	0	1	0	1	0	**82**	0	1	0	0	1	1	1	0	**114**
1	1	0	0	1	0	1	0	**83**	1	1	0	0	1	1	1	0	**115**
0	0	1	0	1	0	1	0	**84**	0	0	1	0	1	1	1	0	**116**
1	0	1	0	1	0	1	0	**85**	1	0	1	0	1	1	1	0	**117**
0	1	1	0	1	0	1	0	**86**	0	1	1	0	1	1	1	0	**118**
1	1	1	0	1	0	1	0	**87**	1	1	1	0	1	1	1	0	**119**
0	0	0	1	1	0	1	0	**88**	0	0	0	1	1	1	1	0	**120**
1	0	0	1	1	0	1	0	**89**	1	0	0	1	1	1	1	0	**121**
0	1	0	1	1	0	1	0	**90**	0	1	0	1	1	1	1	0	**122**
1	1	0	1	1	0	1	0	**91**	1	1	0	1	1	1	1	0	**123**
0	0	1	1	1	0	1	0	**92**	0	0	1	1	1	1	1	0	**124**
1	0	1	1	1	0	1	0	**93**	1	0	1	1	1	1	1	0	**125**
0	1	1	1	1	0	1	0	**94**	0	1	1	1	1	1	1	0	**126**
1	1	1	1	1	0	1	0	**95**	1	1	1	1	1	1	1	0	**127**

● Step 4: System Setting of Centralized Controller

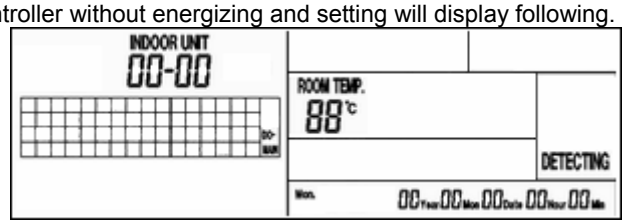
SYSTEM SETTING includes **ADDRESS SETTING** and **INITIALIZE SETTING.** The former one is used for setting address of control object (communication module), and the latter one for initializing the data in the centralized controller （including clear all the finished address settings）.

Since the centralized controller can control at most 64 communication modules and the address of them is 0 to 253 (0 is generally unused), it must specify the address of communication module needed to be controlled. It is **ADDRESS SETTING**, which is not recommended to operate by users.

The debugging personnel can press **SYSTEM/DEBUG** into system setting interface. After pressing **UP**, **DOWN**, **LEFT** and **RIGHT** buttons, press **CONFIRM** button into the interface for selection between **ADDRESS SETTING** and **INITIALIZE SETTING**.

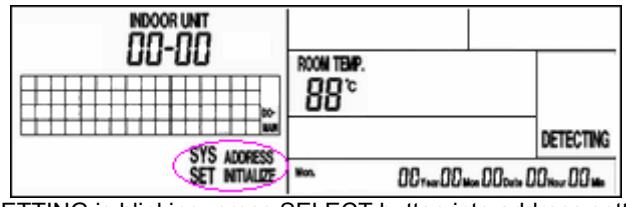
The operation procedure of **ADDRESS SETTING**:

1. The centralized controller without energizing and setting will display following.

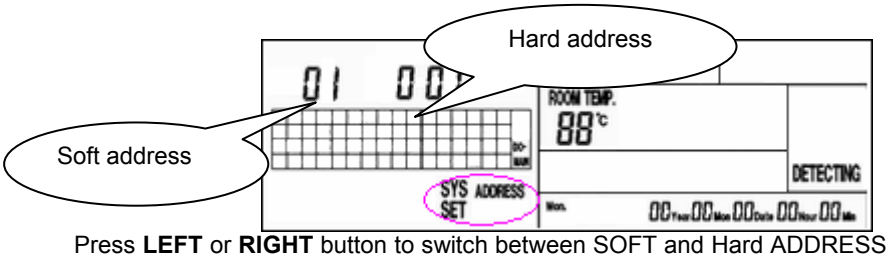


Display Present Unit No. 00-00 which means soft address 00-No. 00 indoor unit. (Soft address is the No. displayed in 1-64 grid of LCD.

Press **SYSTEM/DEBUG** into system setting interface. After pressing **UP**, **DOWN**, **LEFT** and **RIGHT** buttons, press **CONFIRM** button into the interface for selection between **ADDRESS SETTING** and **INITIALIZE SETTING**. Then press UP or DOWN button to switch between them.



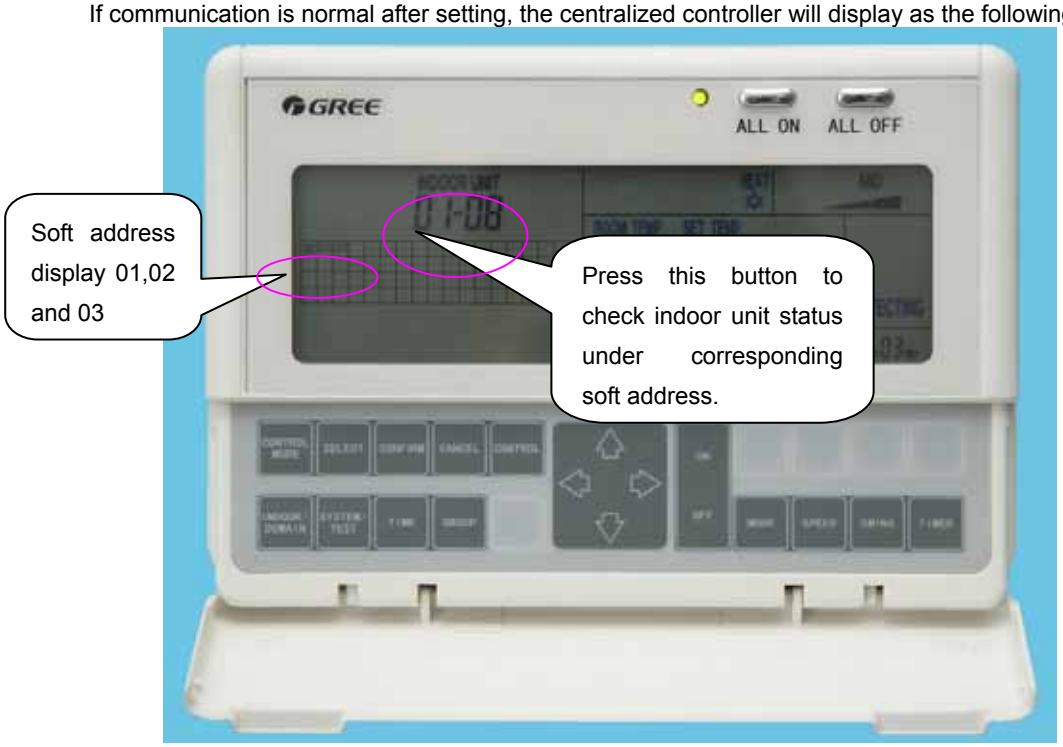
2. When ADDRESS SETTING is blinking, press SELECT button into address setting interface.



Press **LEFT** or **RIGHT** button to switch between SOFT and Hard ADDRESS settings, and **UP** or **Down** button to adjust their values。After adjustment, press **CONFIRM** button to make the address values corresponding and effective. If the cursor stops at hard address position (hard address is blinking), press **CANCEL** button to make the setting value ineffective, in which case, the "- -"will be displayed.(Soft address is the No. displayed in 1-64 grid of LCD and hard address is the actual one of communication module.)

In this example, the centralized controller controls 3 communication modules with the address of 01, 02 and 03 (i.e. hard address is 01,02 and 03).For convenient management, soft address will be set to the same as hard address, i.e. "01 001","02 002"and "03 003".

If communication is normal after setting, the centralized controller will display as the following figure:


GREE
ALL ON
ALL OFF
Soft address display 01,02 and 03
Press this button to check indoor unit status under corresponding soft address.

I. 01,02 and 03 of soft address is displayed, which indicates normal communication of these 3 communication modules.

II. PRESENT UNIT NO. displays "01-08", which indicates No. 08 indoor unit under 01 communication module is being checked.

III. Press ROOM/REGION button to check other indoor units' status under present communication module. Indoor units' status is automatically detected, without setting in centralized controller.

- **Step 5: Troubleshooting during Installation of Centralized Controller**

Generally speaking, **connection of communication lines**, a**ddress DIP of communication module** and a**ddress mapping setting of centralized controller** are the common problems during installation of centralized controller. These problems can be reflected from running indicator (green) of communication module. Meanwhile, it is recommended to debug the centralized controller after making communication of outdoor and indoor units smooth to simplify the problems.

A. Connection of communication lines

① If incorrect or non-connection of communication module, centralized controller and communication line of indoor and outdoor units, the green indicator will be black all the time.

② It indicates connection problem between communication module and centralized controller that green indicator blinks once every 2s.In this case, COM2 must be used to connect them.

③ It indicates connection problem of communication module and indoor and outdoor units that green indicator blinks twice every 2s. In this case, COM1 must be used to connect them. Refer to Step 2, C for details.

B. Address DIP of communication module

There are two methods for address setting. The one is that communication module has been set by software store, but the 3-digital DIP switch can not be dialed to OFF completely. The other one is to set it manually, but the 3-digital DIP switch should be dialed to OFF completely. Refer to step 3 for details.

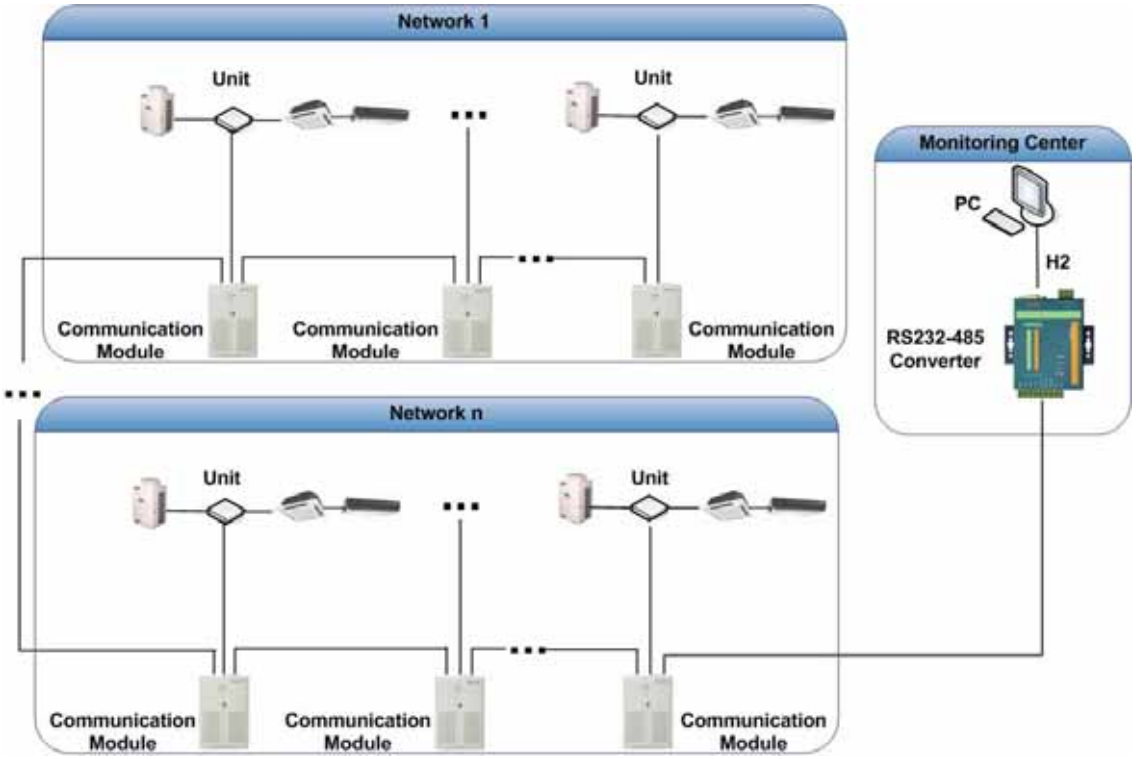
C. Address mapping setting of centralized controller

The centralized controller only can normally operate after specifying address of communication module needed to control. If not, the operation status of communication and indoor units can not be displayed by it. Refer to Step 4 for details.

7 MONITORING SOFTWARE

7.1 Function

As the development and improvement of manufacturing technology and in order to solve the problems of complex distribution of the central AC in the buildings and difficult control and maintenance of them, an platform easy and reliable to operate must be provided to the users for daily management and maintenance. So this long-distance monitoring system combining electronic communication and computer technologies is developed to collect the running state of the units and to monitor and control the units from a long distance. Its structure is as follow:

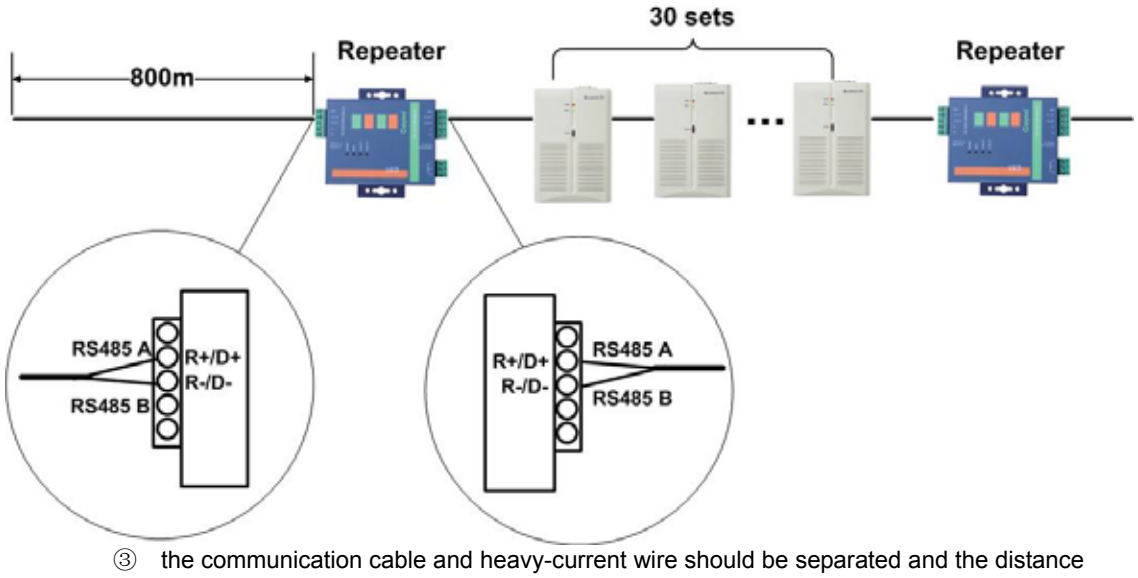


7.2 Connection Between the Computer and the Unit

1. Notice：

① The address code of the communication modules should not be conflicted in one project.

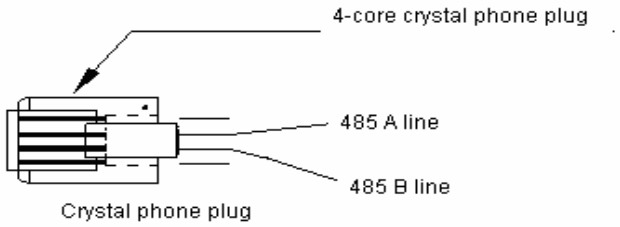
② Optoelectronic Isolated Repeater :One every 800m of communication distance equipped with one and One every 30 communication modules equipped with one.



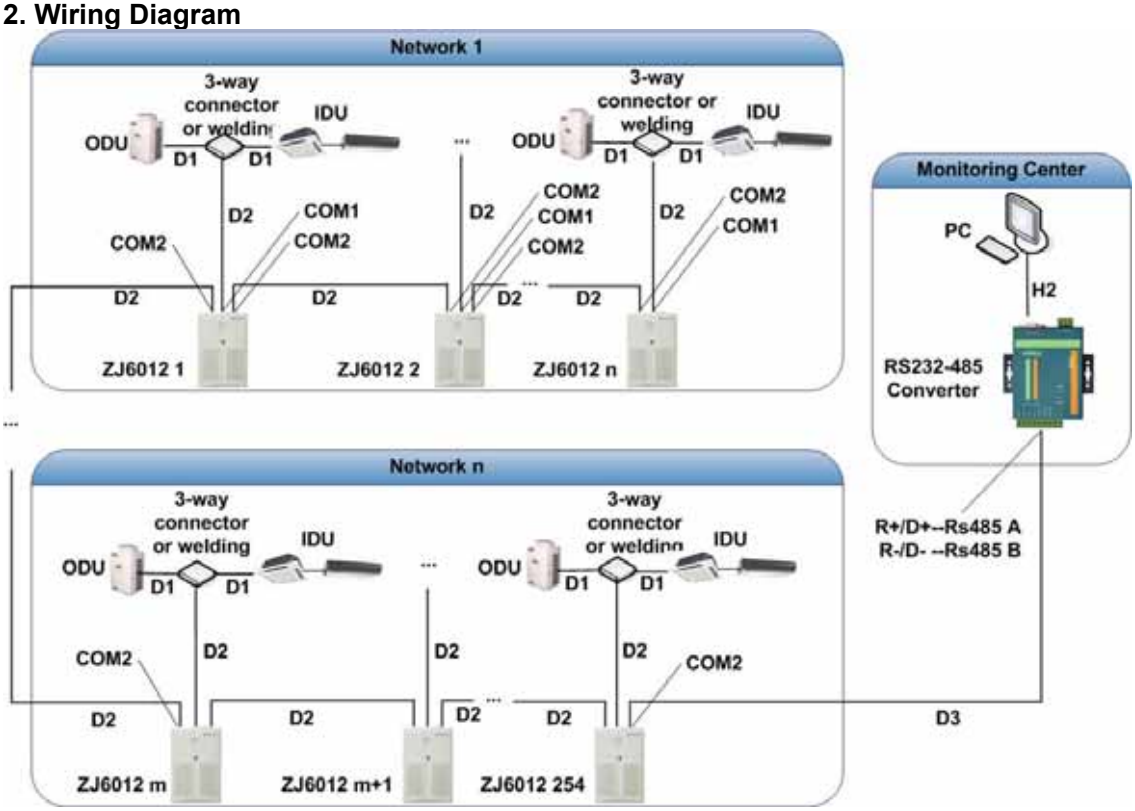
③ the communication cable and heavy-current wire should be separated and the distance between them can not be below 15cm

④ line A and line B of Bus 485 should respectively correspond with line A and line B.

crystal head（crystal head buckle is downwards）



2. Wiring Diagram



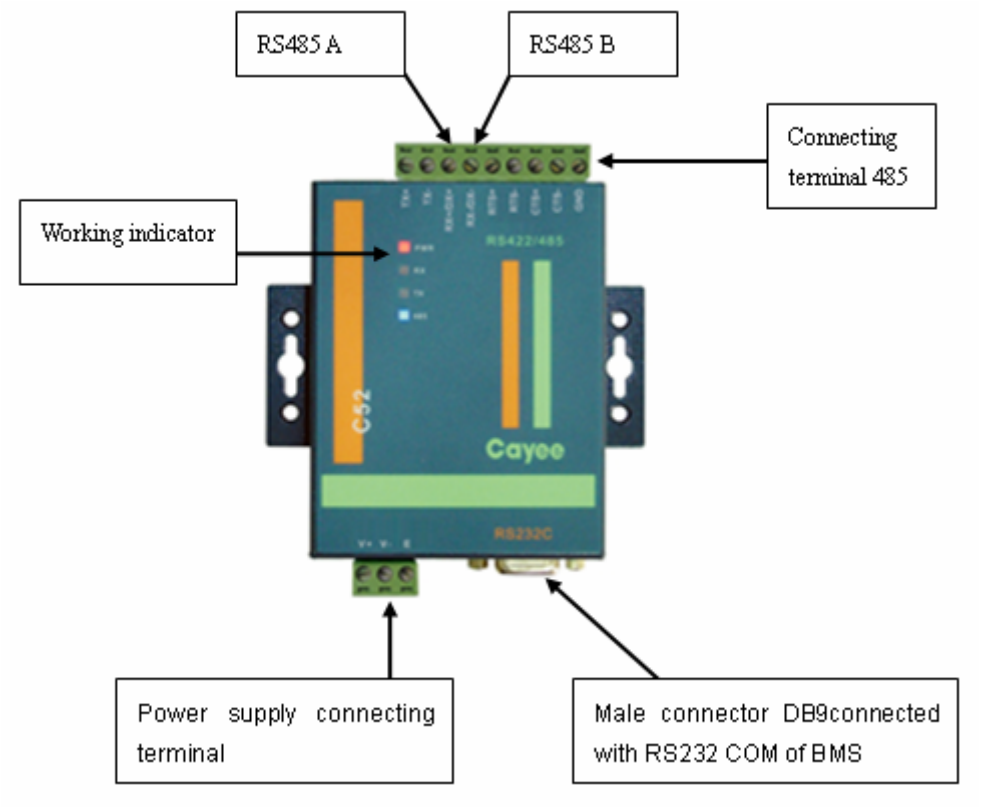
Description of above communication cables

Cable	Description
D1	crystal head and the other end is XH 4-core pin connector（2-core Type-V twisted pair wire）
D2	both crystal head(Standard parts)
D3	crystal head and the other end connects of it connects with wiring terminal of converter.（2-core Type-V twisted pair wire）
H2	both 9-core head (Standard parts)

7.3 Hardware

7.3.1. Introduction to Main Devices

7.3.1.1 R232-R485 Optoelectronic Isolated Converter (standard parts)



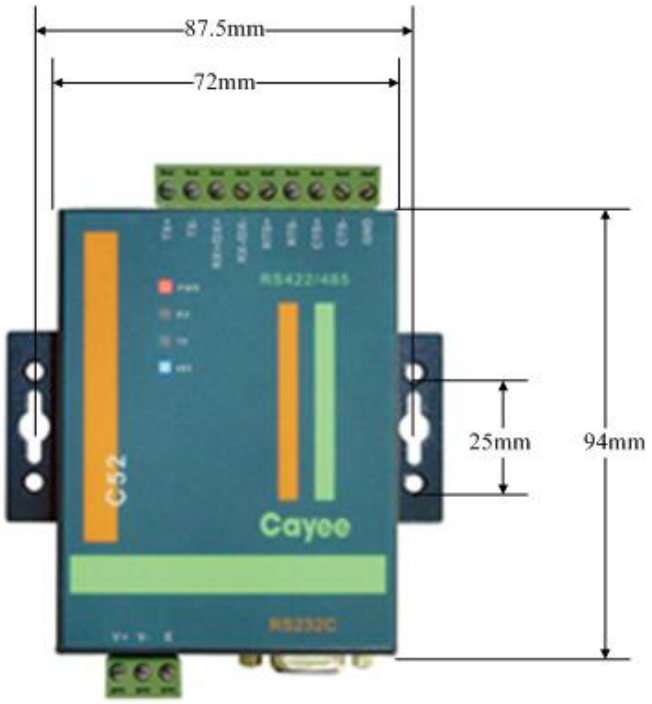
1）Function Introduction:

- R232-R485 optoelectronic Isolated converter is used to convert the signal 232 of PC COM and signal of bus 485.

2）Dimension

Description	L（mm）	W（mm）	H（mm）
optoelectronic isolated converter	94	72	23

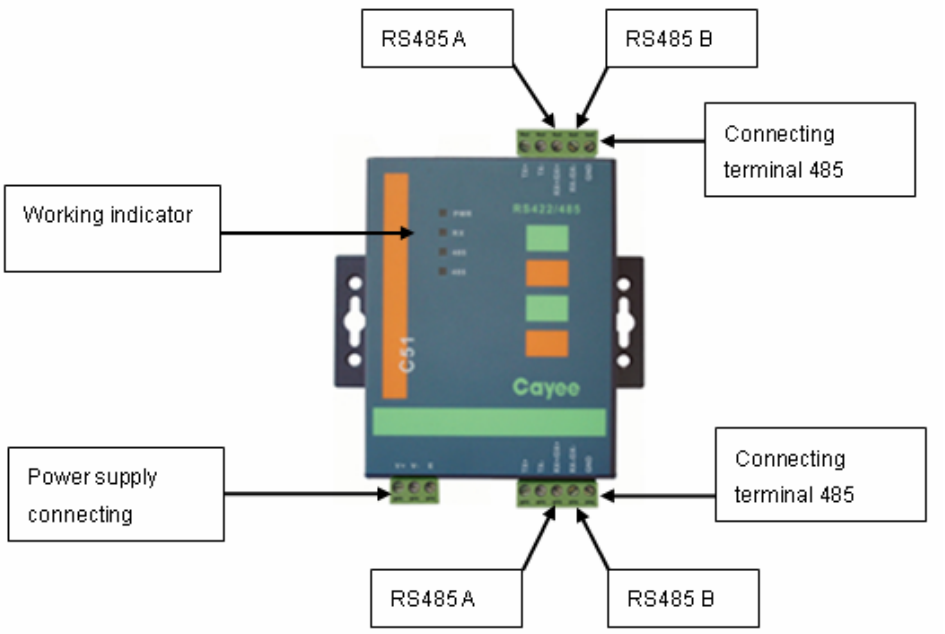
3）Installation Dimension



4）Installation Criteria:

- It must be installed indoors to avoid knock, insolation or rainwater and is better to be put in the monitoring room.
- This device must be the original one in the factory. Never self-buy the models for replacement.
- 220-V AC socket must be installed for independent power supply.
- Power supply specification: 12～30VDC 800mA

7.3.1.2 Optoelectronic Isolated Repeater(optional parts)



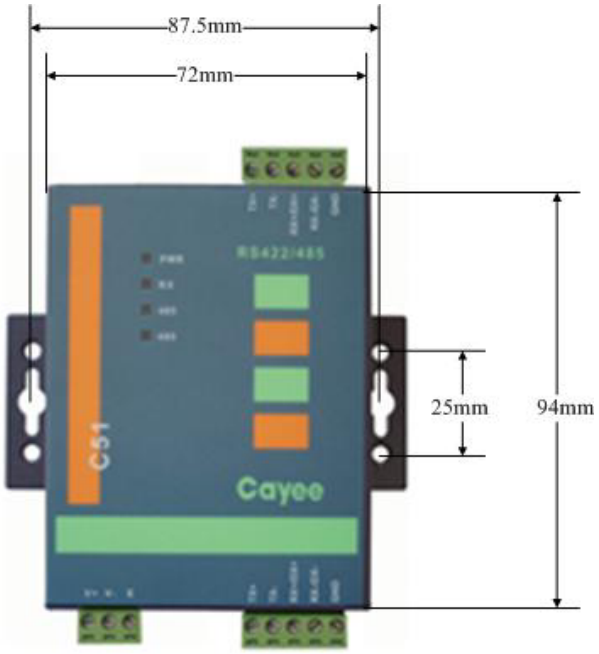
1）Function Introduction:

- Optoelectronic Isolated repeater is mainly used to collect increase of communication distance and nodes when the quantity of communication modules is above 30 or communication distance is above 800m.Refer to Project and Installation section for details.

2）Dimension

Description	L（mm）	W（mm）	H（mm）
Optoelectronic Isolated Repeater	94	72	23

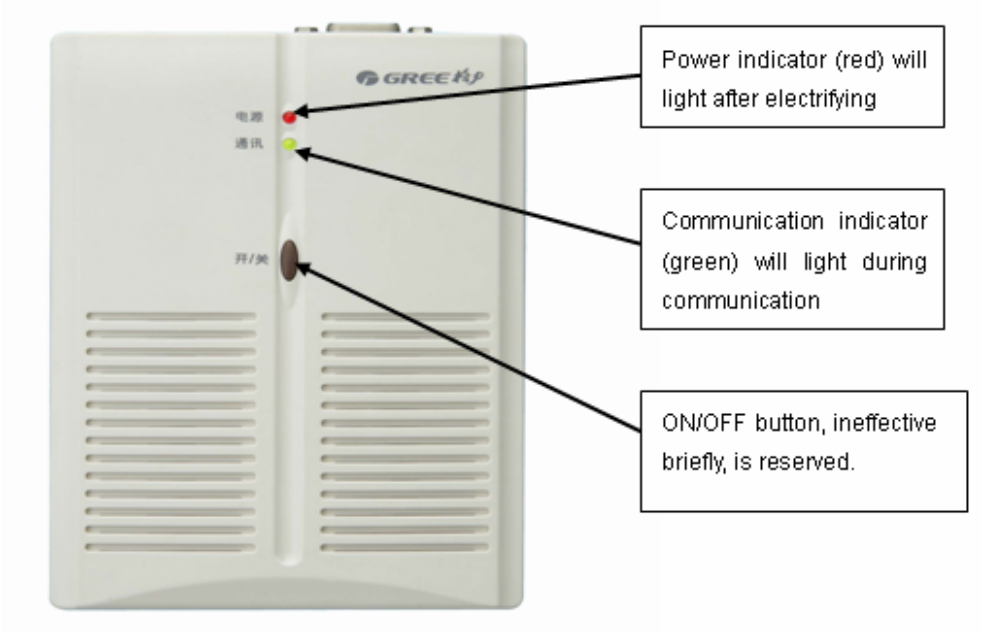
3）Installation Dimension



4）Installation Criteria:

- It must be installed indoors to avoid knock, insolation or rainwater and is better to be put in centralized control cabinet
- This device must be the original one in the factory. Never self-buy the models for replacement.
- 220-V AC socket must be installed for independent power supply.
- 12～30VDC 800mA Power supply specification: 12～30VDC 800mA

7.3.1.3 Communication Module (standard parts)

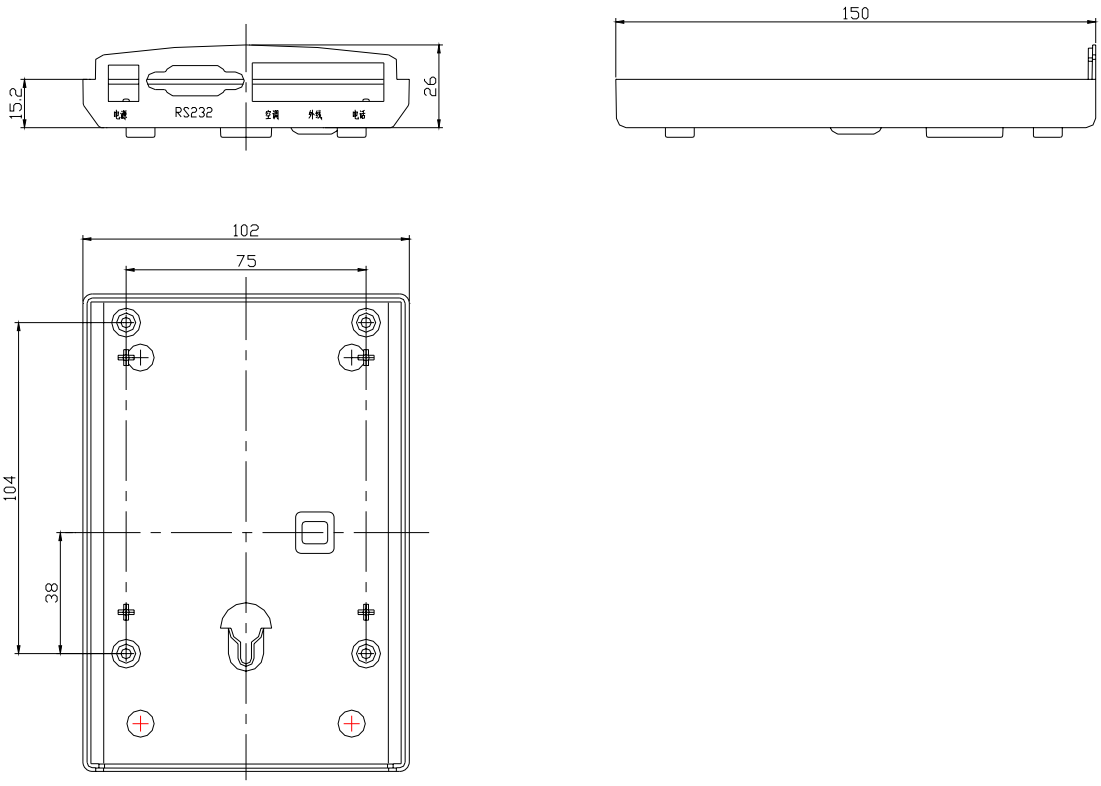

Power indicator (red) will light after electrifying
Communication indicator (green) will light during communication
ON/OFF button, ineffective briefly, is reserved.

1）Function Introduction

- Communication module is used for conversion and transfer of signal of PC and air conditioner during the communication of them, making the role of communication controller. Refer to User Instruction to Communication Module for details.

2）Dimension:

Description	L（mm）	W（mm）	H（mm）
Communication module	150	102	30

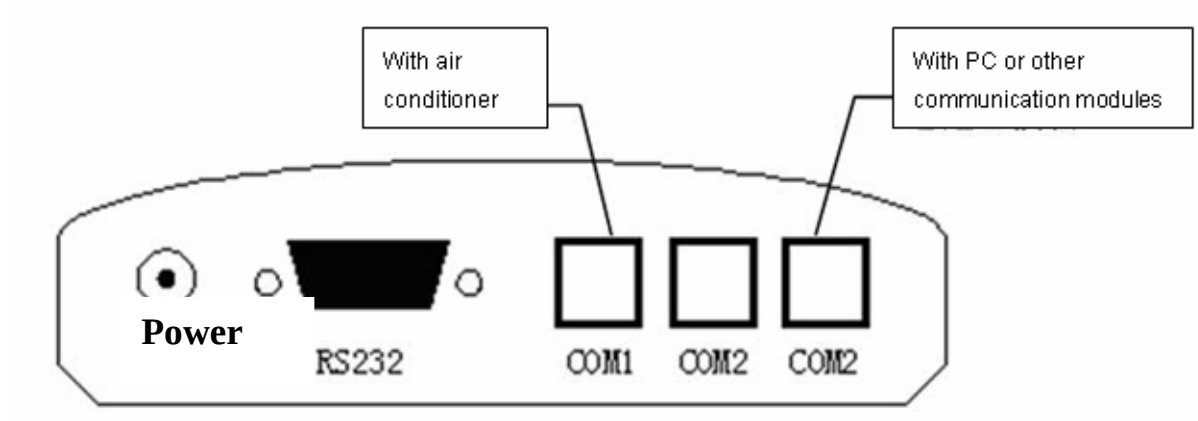


3）Installation Dimension:

Description	Distance to top side（mm）	Diameter（mm）
Hanging Hole	35	5

4）Use Instruction to Communication Module

- The Sketch Map of COM, as shown below:



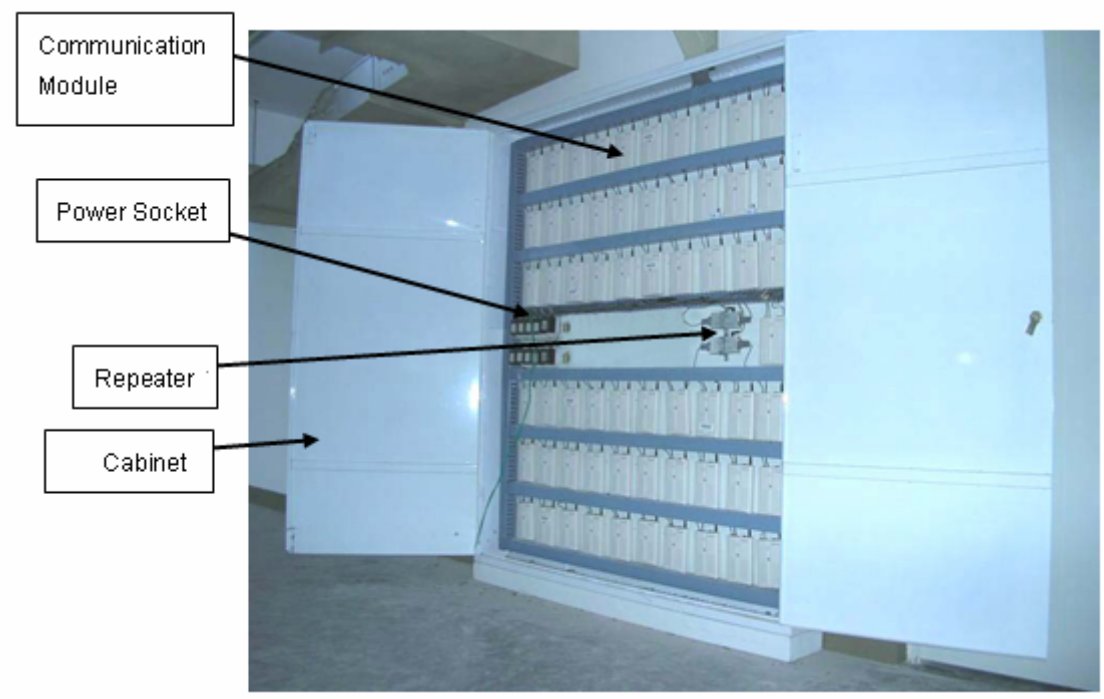
- Use Instruction

Please check the user manual of communication module for details information.

5）Installation Criteria of Communication Module:

- Ensure the specification of power adapter to avoid malfunction or damage to the communication module.
- Ensure unique DIP address of each communication module in the project to avoid malfunction.
- Ensure communication cable connects with correct COM to avoid malfunction.
- The communication modules should be put in centralized control cabinet together to avoid direct sunlight or high temperature and wet environment.
- Power transformer specification: input AC200V～50HZ and output DC9V～800mA

7.3.1.4 Centralized Control Cabinet (user provided parts)



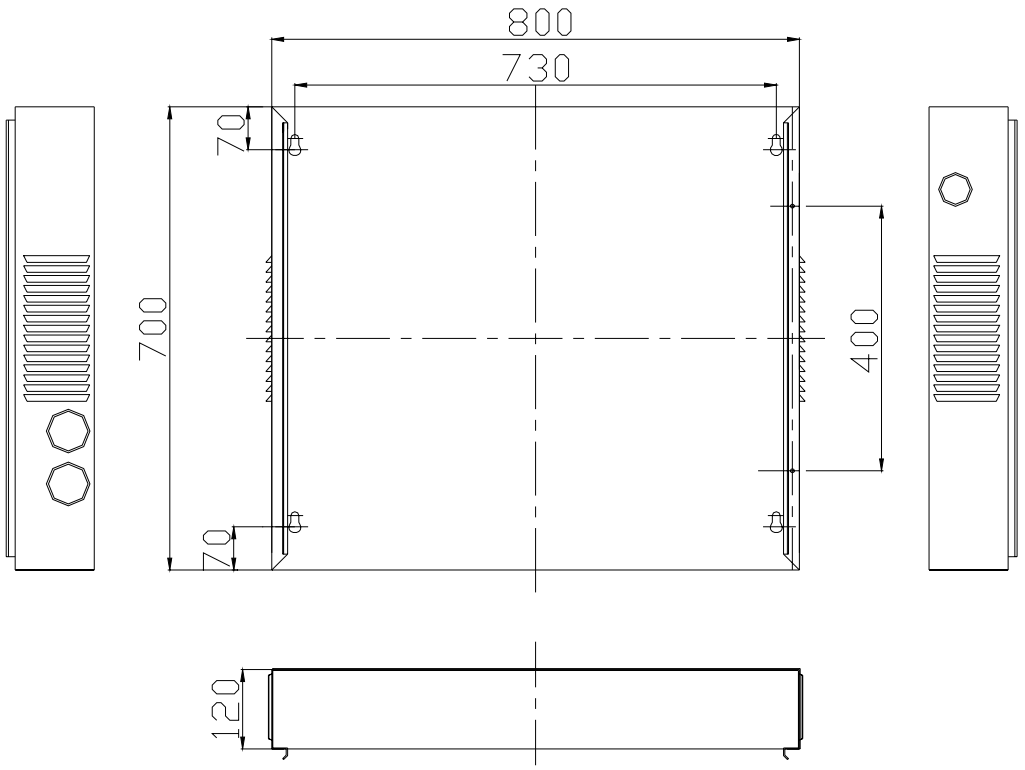
1）Function Instruction:

- It can put the communication modules together for convenient centralized management and reliable operation.

2）Dimension:

- The following dimension is for reference. The cabinet is designed according to 10 communication modules into. If more modules are needed, the cabinet should be designed once again. The internal structure should accord to actual state.

The external dimension of the cabinet (Unit: mm)

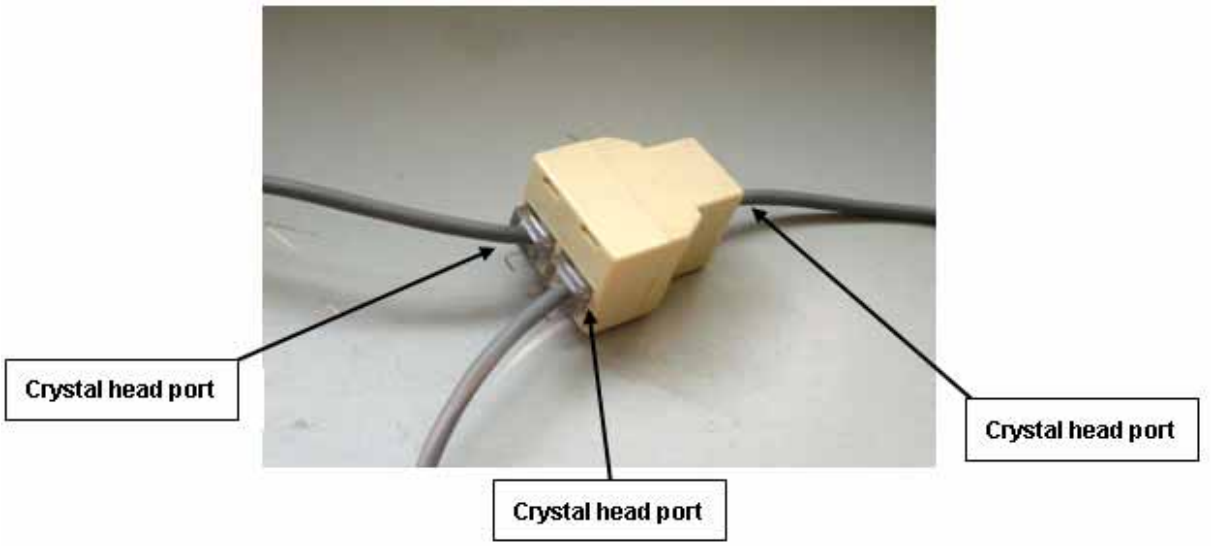


3）Installation Criteria:

- The dimension of the cabinet should be designed according to quantity , arrangement and put position of the communication modules before make of it.
- Independent power supply for each communication module is needed, so enough 220v AC sockets should be installed in the cabinet.
- The communication cable and heavy-current wire should be separated for the distance above 15cm.
- The cabinet should be put indoors and locked to avoid insolation and rainwater or contact of non-manager.

7.3.1.5 3-way Phone Connector(user provided parts)

Note: Lines without 3-way telephone connector can be connected by welding and protected with insulating tape to avoid oxidization and short circuit.



1）Function Instruction: Common 3-way phone connector is applied to connect 3 pieces of communication cable.

Dimension ：

Description	L（mm）	W（mm）	H（mm）
3-way connector	33	27	21

2）Installation Criteria:

- Avoid knock, insolation or rainwater.
- Ensure tightness of each bayonet without load.
- Perform conduction test after installation. Replace the ones of poor contact.
- The welding method is better than 3-way connector.
- After the connection of communication cables with 3-way connector, it must be fixed by insulating tape to avoid loose and poor contact of crystal head.

INSTALLATION

INSTALLATION

1 PRECAUTIONS FOR INSTALLATION

1.1 Precautions for Installation

Before installation, please ensure if the installing site, power ratings, possible operating range (pipe distance, height difference between indoor and outdoor unit, power voltage) and installing space are correct and suitable. The outdoor unit is general to all models according to its power.

- To ensure correct installation, please make sure to read the Safety Considerations thoroughly before starting the installation works.
- The considerations stated below are classified into ⚠WARNING and ⚠CAUTION. Those that might cause death or severe injury in case of wrong installation are identified in ⚠WARNING. However, those that are stated in ⚠CAUTION may also cause severe accidents sometimes. Therefore, both of them relate to important safety considerations and must be strictly followed.
- After completing the installation and test run and confirming that all are normal, please introduce to the client on how to use and repair the machine according to the Operating Instructions. Besides, please deliver the considerations herein to the clients together with the Operating Instructions, and ask them to keep properly.

⚠ WARNING!

- The installation shall be performed by the vendor or professional dealer from which you buy the machine. If you install by yourself, any improper installation might cause water leakage, electric shock or fire accident.
- The installation shall be done correctly according to installation instructions. Improper installation may cause water leakage, electric shock or fire.
- To install a large air-conditioning system in a small room, please make sure to take measures to prevent that the refrigerant will not exceed the limit concentration in case of leakage. For the measures to prevent the refrigerant from exceeding the limit concentration, please consult your dealer. If no proper measures, it might cause human suffocation in case of refrigerant leakage.
- Please install at a position that is strong enough to support the weight of machine. If the installing position is of low strength, the machine may drop down and thus cause human injury.
- Please carry out installation in accordance with the rules for preventing the typhoon or earthquake. The machine may tip over if the installation does not comply with the requirements.
- The electrical cabling shall be carried out by qualified electricians in accordance with the Safety Code for Electrical Equipment, relevant local rules and the installation instructions. Make sure to use the special-purpose circuit. If the power circuit capacity is low or the construction is improper, it might cause electric shock or fire accidents.
- Please use suitable cables and connect them securely. Please fix the terminal joints securely. The terminal connection shall not be affected due to any external force applied onto the cable. Improper connection and fixing may cause heating and fire accidents.
- Keep the cables in correct shape and prevent them from protruding upward. Please protect them securely with repair board. Improper installation may cause heating and fire accidents.
- When erecting or relocating the air conditioner, do not let any air enter into cooling circulation system except the specified refrigerant. If any air is mixed, abnormal high pressure will occur in the cooling circulation system, thus causing crack or human injury accidents.
- During installation, please always use the attached parts or designated parts. Failure to use the designated parts may cause water leakage, electric shock, fire or refrigerant leakage.

⚠ CAUTION:

- Please earth securely. Do not connect the earth wires to gas pipe, water pipe, lightning rod or telephone line. Improper earthling might cause electric shock.
- Leakage circuit breaker must be installed at some place. No installation of leakage circuit breaker might cause electric shock.
- Do not install at a place where inflammable gas might leak. Gas leakage and despot around the machine might cause fire accidents.
- To ensure correct drainage of water, the drainage pipe shall be installed according to the installation instructions. Also the heat insulation shall be provided to avoid condensing. Improper installation of the pipe might result in water leakage and lead to possible wetting of the articles in the room.

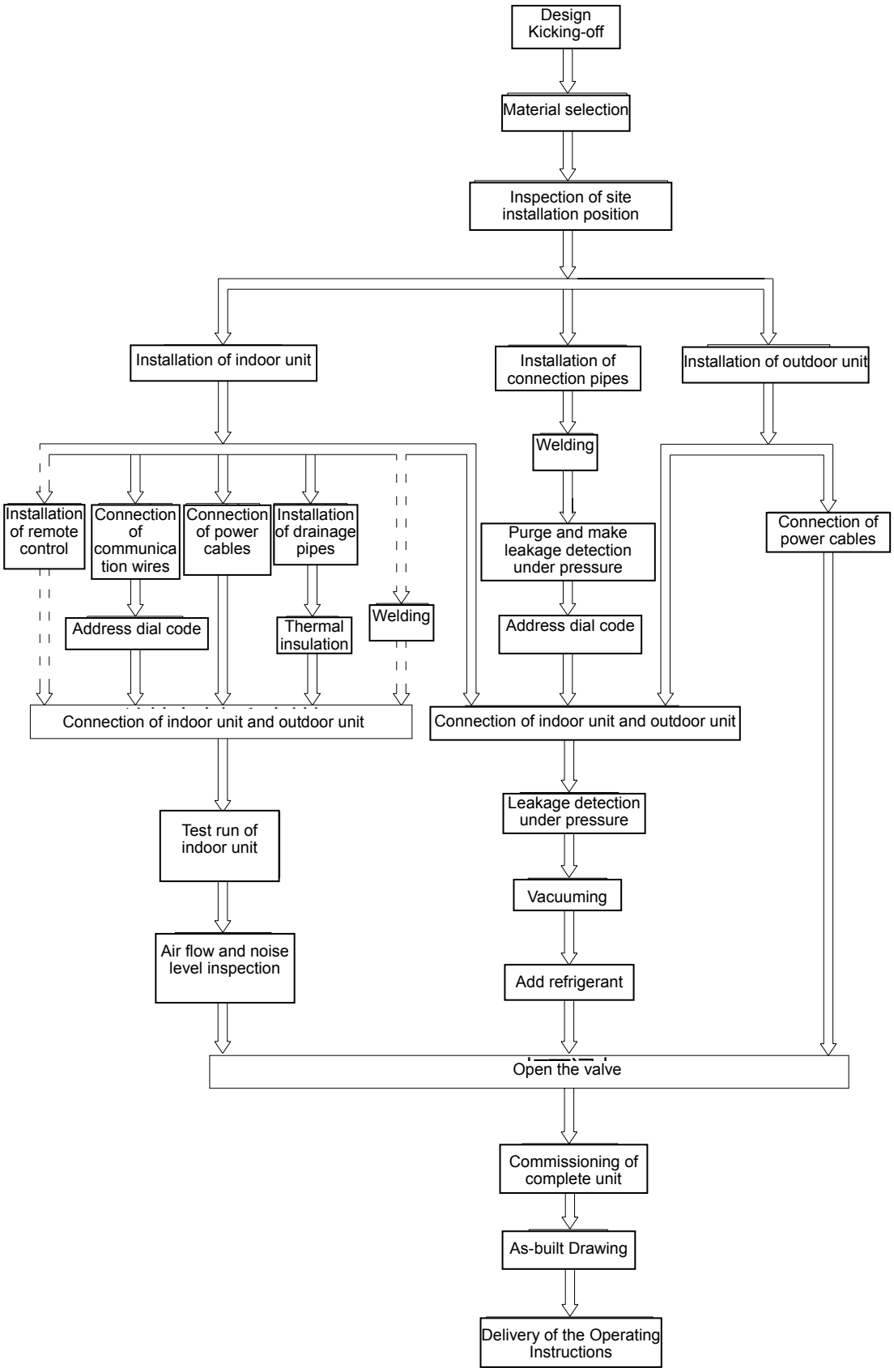
1.2 Key Points of Installation

<table>
<tr><th colspan="3">Installation Procedures</th><th>Description and Acceptance Criteria</th></tr>
<tr><td colspan="3">Material Selection and Equipment Inspection</td><td>1. The materials specified on the engineering drawing shall be purchased as specified (e.g. copper tube, thermal insulation tube, PVC pipe, power cables, air switch, etc);
2. The materials not specified on the engineering drawing shall be purchased according to the actual quantity of works (e.g. hanger frame, cable duct, etc);
3. Check if the outdoor unit, indoor unit, communication wires and accessories are complete.</td></tr>
<tr><td rowspan="6">Installation of indoor unit</td><td rowspan="2">Communication wire</td><td>Connection</td><td>1. The power cables shall be separated from communication wires at a least distance of 10cm.
2. To avoid breaking the communication wires, please do not use strong force.
3. For multiple units, please mark them properly.
Switch on indoor and outdoor unit, and ensure there is no display of “Communication Wire Error E6”</td></tr>
<tr><td>Address dial code</td><td>1. Each indoor unit under the same system has a unique address dial code.
2. The wired controller and its corresponding indoor unit have the same address dial code.</td></tr>
<tr><td colspan="2">Remote Control</td><td>1. Select the remote control mode;
2. The centralized controller and communication module shall be installed free from the source of interference.</td></tr>
<tr><td colspan="2">Power cord</td><td>1. The power cable must meet the specifications.
2. The indoor units under the same system must be arranged under unified power supply.</td></tr>
<tr><td rowspan="2">Drainage Pipe</td><td>Installation</td><td>1. The PVC pipes must meet the specifications.
2. A specific gradient must be provided along the water flow direction.
3. Carry out water detection after installation.
Carry out thermal insulation to the drainage pipe only after the water detection is accepted.</td></tr>
<tr><td>Thermal insulation</td><td>1. The thermal insulation tube must meet the specifications.
2. Seal between the thermal insulation pipes to avoid air entry.</td></tr>
<tr><td colspan="2">Installation of Air Duct (when with high static pressure duct-type unit)</td><td>1. Design the length of air duct according to static pressure;
2. The air inlet shall be optimally designed to avoid too small size</td></tr>
</table>

<table>
<tr><td rowspan="3">Installation of connection pipes</td><td>Welding</td><td>1. The copper tube must meet the specifications.
2. Ensure it is dry and clean inside the tube.
3. Make sure to charge nitrogen as required for protection when welding the tubes.
4. Please keep to the welding process and ensure the system free of leakage.
5. Add a dual-way filter on liquid pipe side
6. For multiple systems, please mark them properly.
Carry out leakage detection under pressure after welding.</td></tr>
<tr><td>Purge and make leakage detection under pressure</td><td>1. Purge the system clean.
2. Keep the pressure for 24 hours
Except for the influence by temperature, it is deemed acceptable if pressure drop is within 0.02MPa. (With the temperature change by 1℃, the pressure will change by approx. 0.01MPa)</td></tr>
<tr><td>Thermal insulation</td><td>1. The thermal insulation tube must meet the specifications.
2. Seal between the thermal insulation pipes to avoid air entry.</td></tr>
<tr><td colspan="2">Installation of outdoor unit</td><td>1. Select the installing position correctly.
2. Build the foundation according to the anchor bolt position and the dimension of outdoor unit
3. Build the damping device properly.
4. Avoid sharp knock when handling the outdoor unit. The inclination angle shall not be higher than 15°</td></tr>
<tr><td colspan="2">Connection of indoor unit and outdoor unit</td><td>1. Tighten the nuts;
2. Provide proper protection to the outdoor connection pipe, communication wires and power supply.</td></tr>
<tr><td colspan="2">Leakage detection under pressure</td><td>Keep the pressure for 24 hours. Except for the influence by temperature, it is deemed acceptable if pressure drop is within 0.02MPa. (With the temperature change by 1℃, the pressure will change by approx. 0.01MPa).</td></tr>
<tr><td colspan="2">Vacuuming</td><td>1. Establish vacuum simultaneously in the gas pipe and liquid pipe;
2. The vacuuming time shall be long enough.
Put still for 1 hour after vacuuming. It is deemed acceptable if the pressure will not rise.</td></tr>
<tr><td colspan="2">Add refrigerant</td><td>Add refrigerant according to the volume as specified on the engineering drawing.</td></tr>
<tr><td colspan="2">Open the valve of outdoor unit</td><td></td></tr>
<tr><td colspan="2">Commissioning of complete unit</td><td></td></tr>
</table>

Remarks: 1) Described above are general working procedures. The procedures might vary with the site conditions.
2) For detailed installation rules, please see the description in each chapter.

1.3 FLOW CHART OF INSTALLATION



2 TOOLS FOR INSTALLATION

2.1 Common Tools

S/N	Material	Specification	unit	Qty	S/N	Material	Specification	unit	Qty
1	Three-stage distribution cabinet	——	set	According to practical situation	15	Momental spanner	17~36mm	set	According to practical situation
2	Light	——	pcs		16	Non-adjustable wrench	——	pcs	
3	Fire extinguisher	——	pcs		17	Adjustable wrench	8".12"	pcs	
4	Uniform	——	suit		18	Pliers	——	pcs	
5	Hard hat	——	head		19	Scissors	——	pcs	
6	Safety strap	——	set		20	Oxygen relief valve	——	pcs	
7	Copper pipe and cutting knife	1/4～2 5/8"	pcs		21	Nitrogen relief valve	0~6MPa	pcs	
8	Pipe bender	——	set		22	Acetylene relief valve	——	pcs	
9	Pipe-expanding machine	——	set		23	Backfire check valve	——	pcs	
10	Casing roller	9.5~25.4vmm	set		24	Manometer	——	pcs	
11	Level bar	——	pcs		25	Electric hand drill	——	pcs	
12	Phillips screwdriver	——	set		26	Rivet Gun	——	pcs	
13	Slotted Screwdriver	——	set		27	Electric hammer	——	pcs	
14	（gas）welding tools	——	set		28	——	——	——	

2.2 The Tools which can’t be Mixed for Different Refrigerants

Name	Function	Reason
Lubricant	Spread it on nut cap to lubricate its surface which contains organic artificial oil FVC68D	R22 uses mineral oil SUNISO4GS which can’t compatible with R410A. The grease filth will be casued if they are mixed.
Refrigerants	Charge refrigerants	Pressures of R410A and R22 are quite different.
Vacuum pump and connector	Vacuumization	Vacuum pump can be universal. But the connector which can prevent the mineral oil inside the pump from backflow shall be installed. In other words,check valve shall be installed.
Manometer	Create and keep vacuum; charge refrigerants and check pressure.	They cam’t be all-purpose because a. different pressure resistance; b. grease filth will be accumulated to cause blockage and malfunction of compressor.
Charge conduct pipe		
Leak detector	Detect leakage	The detection methods are different for different work substances

3 SELECTION OF INSTALLATION MATERIAL

Materials and equipments for installation shall have correspongding certificate of qualification and inspection report. If there is fire resistance requirements for the product, there shall be such certificate and it shall comply with related regulations.

Besides, If customers require environmentally friendly materials, such materials shall comply with national environment requirements and provide related certificates.

Requirements for Main Materials

3.1 Refrigerants Pipeline

a．Dephophorized seamless and drawn copper tube for air conditioner；Material Requirement:

b. Appearance Requirements: There are no needle holes,crack,peeling,blister,impurity,copper powder,rust,dirty or serious oxide film on the surface of the pipe and also there shall be no other cosmetic defects.

c． Inspection Report: There must be certificate and quality inspection report.

d． Strength of extension shall not be less than 240kgf/mm^2 ;

e． Specification：

Outer Diameter of Copper Pipe（mm）	Refrigerants	Min.Wall Thickness（mm）	Type
6.35	R22	0.5	0
	R410A	0.8	
9.52	R22	0.71	0
	R410A	0.8	
12.7	R22	0.8	0
	R410A	0.8	
15.88	R22	1.0	0
	R410A	1.0	
19.05	R22	1.0	0
	R410A	1.0	1/2H
22.2	R22	1.5	1/2H
	R410A	1.5	

f． After cleaning and drying the inside of the copper pipe, Seal pipe orifice with pipe cap,plug or adhesive tape.

3.2 Circulating Pipe

The PPR pipe with outer diameter dn25 which is S2.5 series (thickess is 4.2mm) is recommended.Hot-water pipes are applied as feed pipe for cooling water and discharge piep for hot water. The PPR pipe with outer diameter dn20 which is S2.5 series (thickess is 3.4mm) is recommended.All applied PPR pipes must comply with national standards GB/T18742.If other insulated pipeline are adopted, the above can be reference.

3.3 Discharge Pipe for Condensate

a. Applicable pipelines for discharging water from air conditioner: Feed pipe UPVC, PP-R pipe, PP-C pipe and hot galvanizing steel pipe

b. Complete certificates and quality inspection reports

c. Requirements of Specification and Thickness

Feed Pipe UPVC：Φ32mm×2mm，Φ40mm×2mm，Φ50mm×2.5mm

hot galvanizing steel pipe：Φ25mm×3.25mm，Φ32mm×3.25mm，Φ40mm×3.5mm，

Φ50mm×3.5mm。

3.4 Heat Insulating Materials

a.NPR-PVC；

b. Non-flammable grade is B1.

c. Refractoriness shall not be less than 120℃

d. Thickness of heat insulating material of condensate pipe can't be less than 10mm.

e. If diameter of copper pipe is greater than or equal to Φ15.88mm, the thickness of heat insulating material can't be less than 20mm; if diameter of copper pipe is less than 15.88mm, the thickness of heat insulating material can't be less than 15mm;

3.5 Communication Wire and Control Wire

Communication wire and control wire must be the twisted pair or shielding twisted pair which are standard accessories of the unit.

3.6 Power Cord

Power cord must be copper

Conductor and shall comply with related national standards and meet the requirements of units'loads.

3.7 Suspender and Bracket

a.Suspender：M8 or M10；

b.Trough Iron：14＃ or above；

c.Steel Angle：Equal Sides 30mm×30mm×3mm or above；

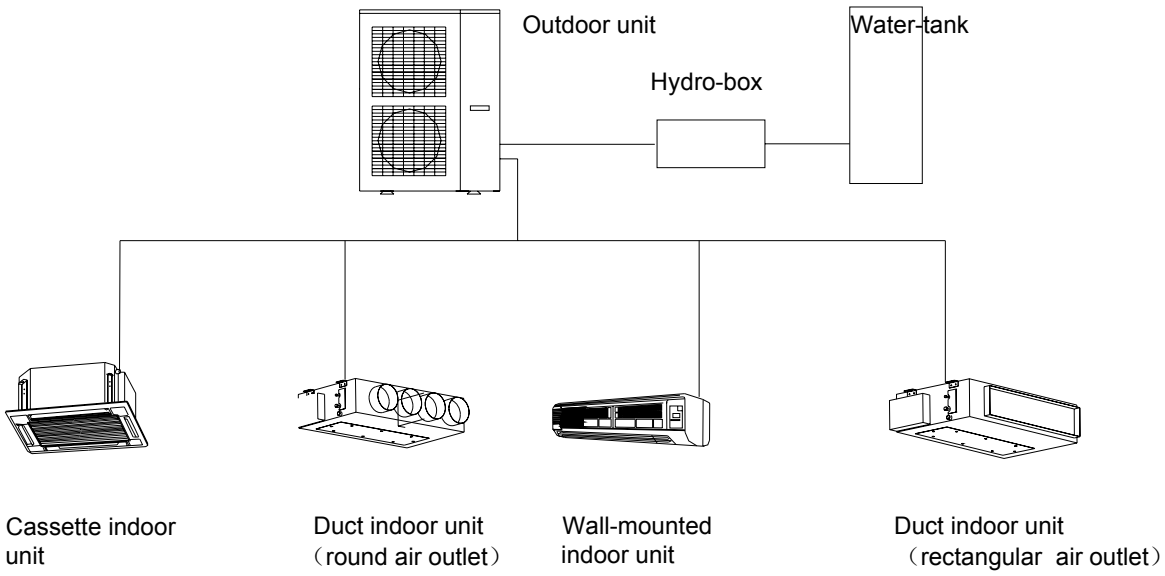
d.Round Steel：More than Φ10mm.

4 INSTALLATION SCHEMATIC DIAGRAM

4.1 Installation Schematic Diagram of Units with Side Air Outlet

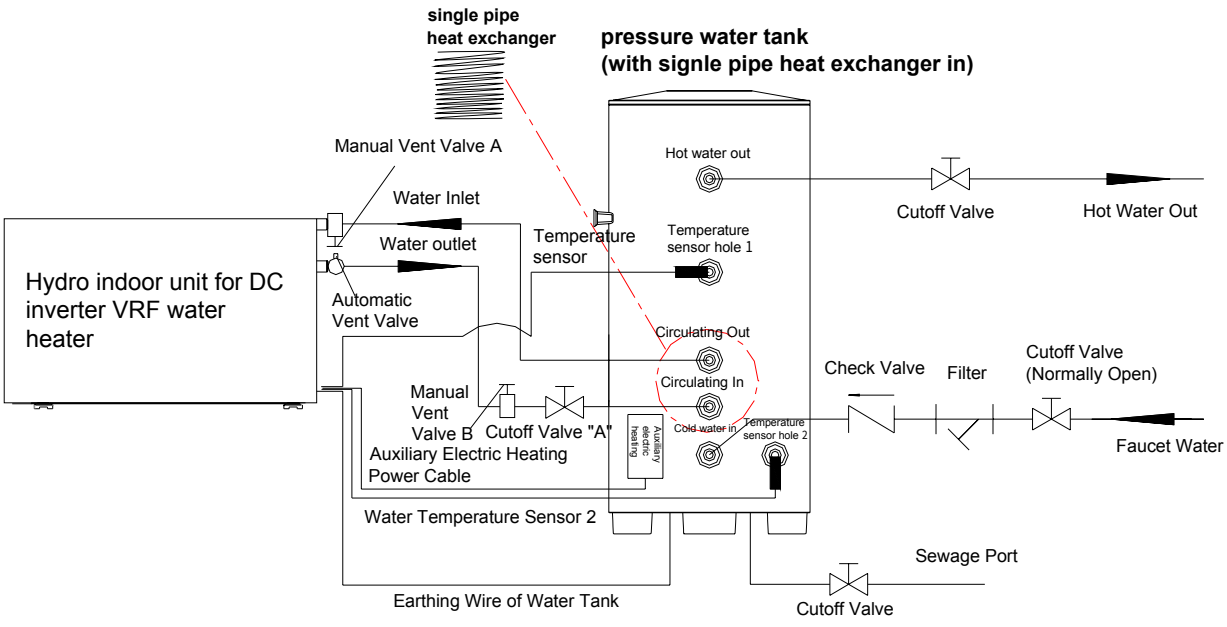
Applied for GMV-Pds100W/Na-K.GMV-Pds120W/Na-K.GMV-Pds140W/Na-K.GMV-Pds160W/Na-K equipped with RQD8GA-K and RQD5GA-K

	Model of Hydro-box	Model of Water Tank
GMV-Pds160W/Na-K	RQD8GA-K RQD8GA-B RQ8GA-B	SXD350LC-K 或 SXD400LC-K SXVD350LCJ/A-K SXVD400LCJ/A-K SXVD350LCJ2/A-K SXVD400LCJ2/A-K
GMV-Pds140W/Na-K		
GMV-Pds120W/Na-K	RQD5GA-K RQD5GA-B RQ5GA-B	SXD250LC-K SXD300LC-K SXVD200LCJ/A-K SXVD300LCJ/A-K SXVD200LCJ2/A-K SXVD300LCJ2/A-K
GMV-Pds100W/Na-K		

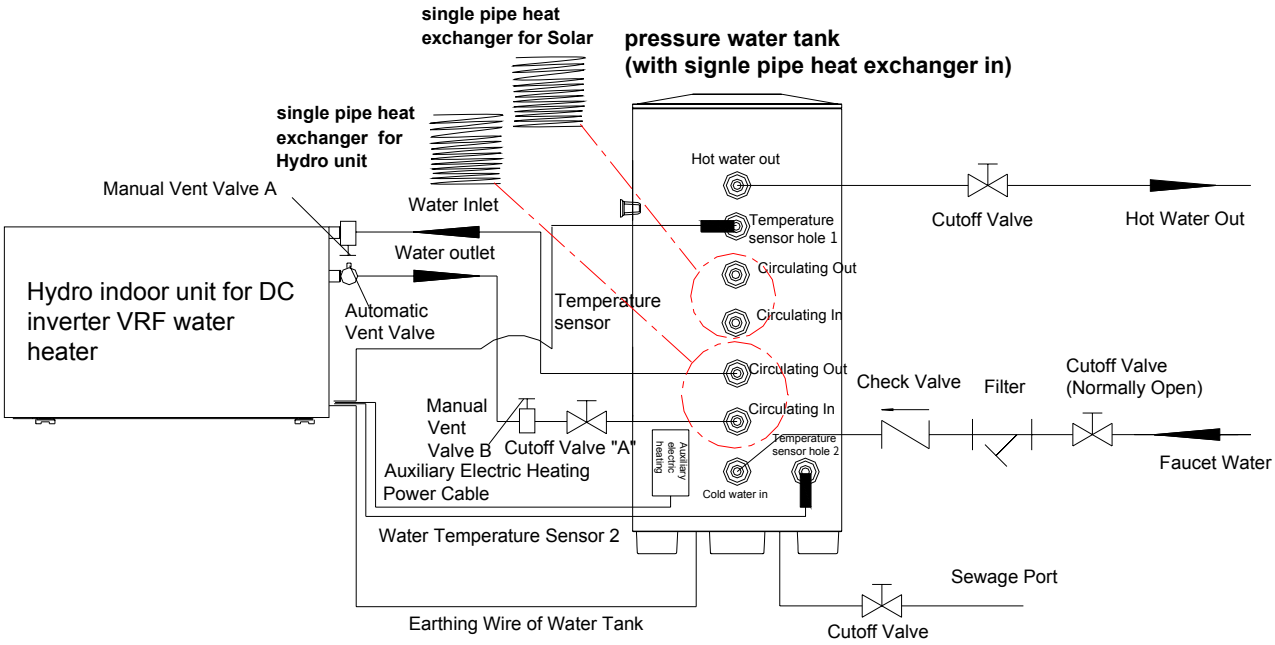


There are A,B,C three installation methods for hydro-box of units with side air outlet

Installation Schematics A



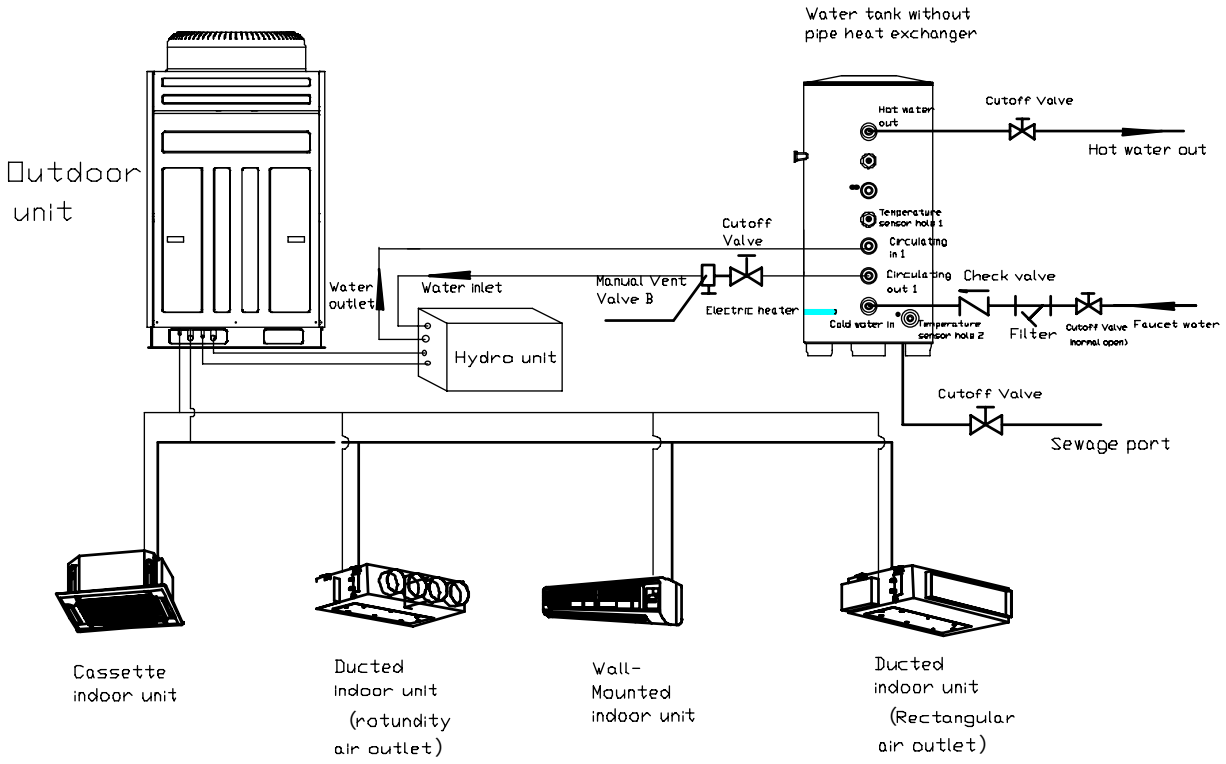
Installation Schematics B



Installation Schematics C

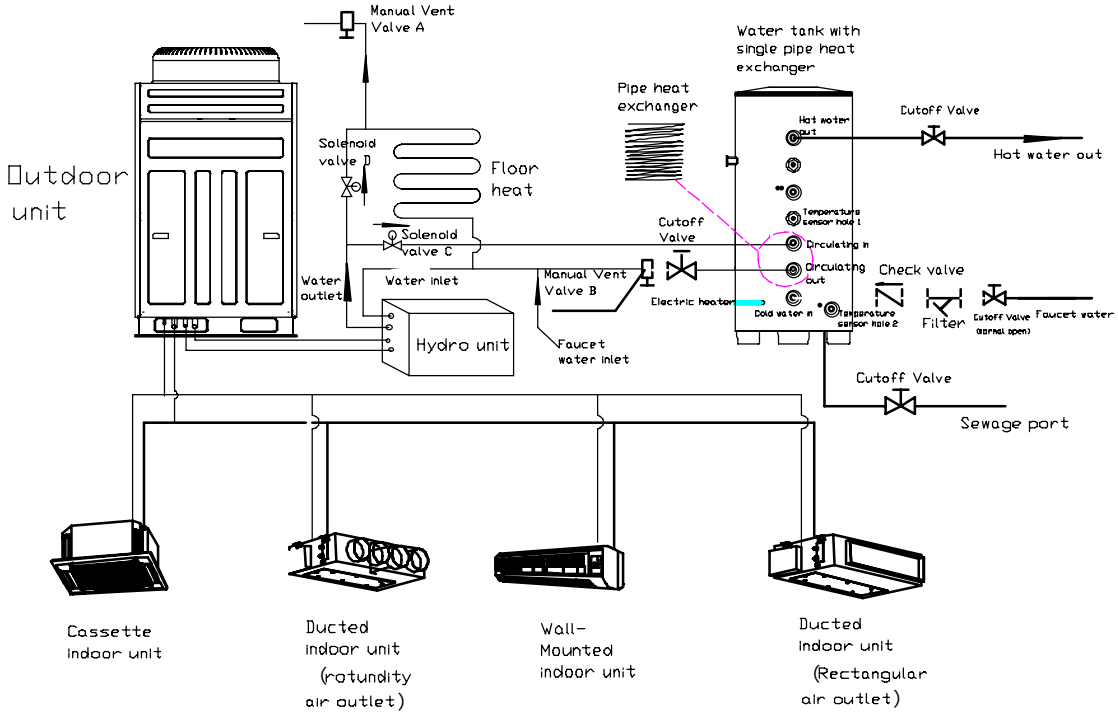
4.2 Installation Schematic Diagram of Units with Top Air Outlet

A.B.C.D.D The diagrams below are applicable to GMV-Pds224W/Na 和 GMV-Pds280W/Na equipped with RQD20LA.RQD30LA.RQ20LA.RQ30LA.



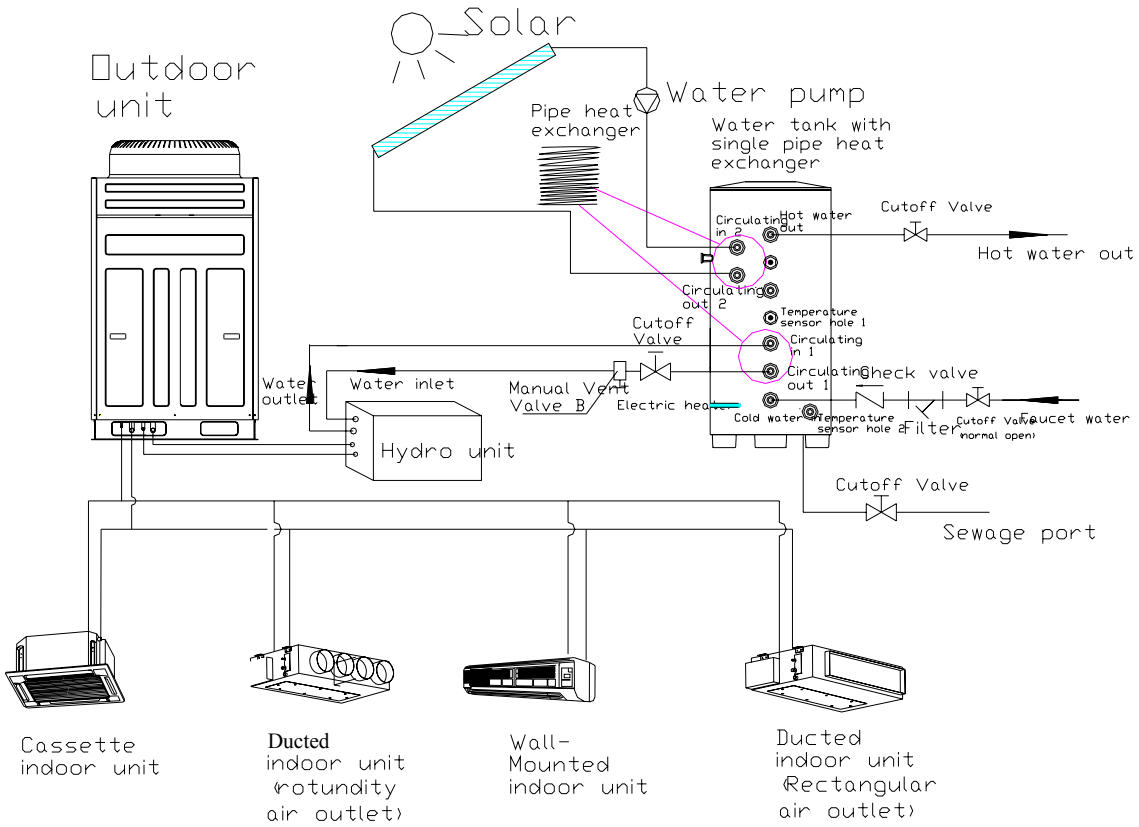
Skecth map of installation A（only water tank）

Diagram A	Model of Hydro-box	Recommended water tank
GMV-Pds224W/Na-M	RQ20LA-K	SXD350LC-K or SXD400LC-K
GMV-Pds280W/Na-M	RQ30LA-K	SXD350LC-K or SXD400LC-K



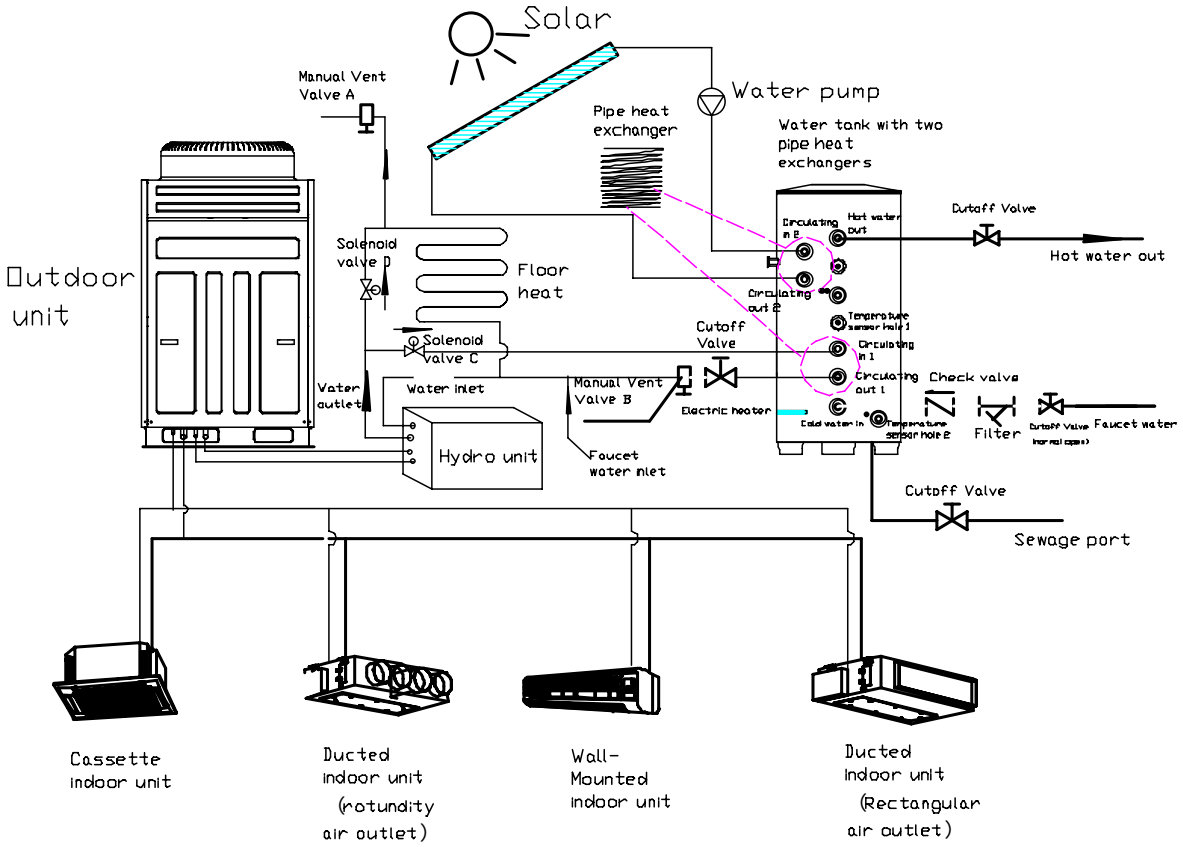
Skecth map of installation B（with floor heater and water tank）

Diagram B	Model of Hydro-box	Recommended water tank
GMV-Pds224W/Na-M	RQD20LA-M	SXVD350LCJ/A-K or SXVD400LCJ/A-K
GMV-Pds280W/Na-M	RQD30LA-M	SXVD350LCJ/A-K or SXVD400LCJ/A-K



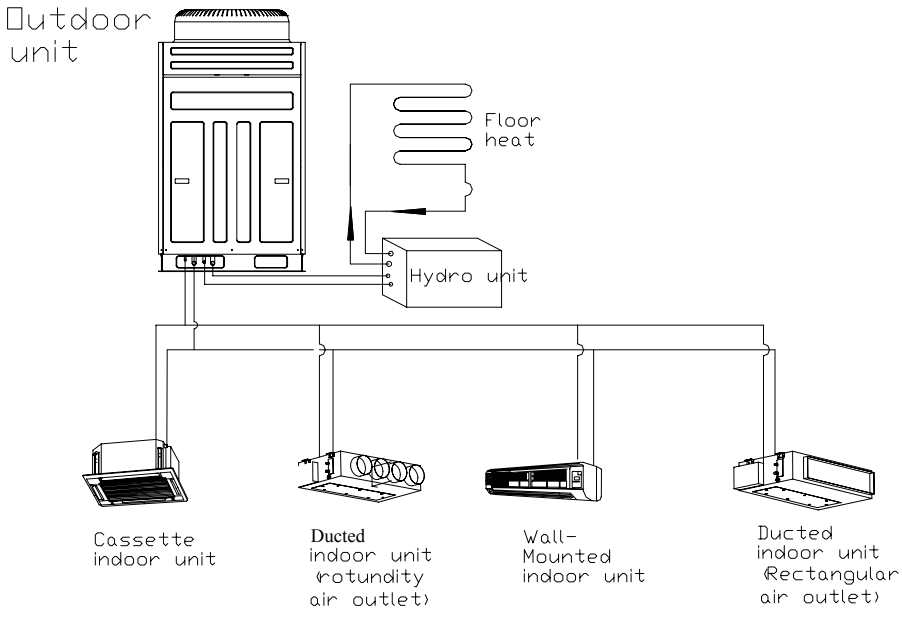
Skecth map of installation C（with solar and water tank）

Diagram C	Model of Hydro-box	Recommended water tank
GMV-Pds224W/Na-M	RQ20LA-K	SXVD350LCJ/A-Kor SXVD400LCJ/A-K
GMV-Pds280W/Na-M	RQ30LA-K	SXVD350LCJ/A-Kor SXVD400LCJ/A-K



Skecth map of installation D（with solar,floor heater and water tank）

Diagram D	Model of Hydro-box	Recommended water tank
GMV-Pds224W/Na	RQD20LA-M	SXVD350LCJ2/A-K or SXVD400LCJ2/A-K
GMV-Pds280W/Na-M	RQD30LA-M-M	SXVD350LCJ2/A-K or SXVD400LCJ2/A-K



Skecth map of installation E（for floor heating）

Diagram E	Model of hydro-box	No need for floor heating
GMV-Pds224W/Na-M	RQD20LA-M	/
GMV-Pds280W/Na-M	RQD30LA-M	/

The above installtion methods can be selected for installation of the unit. The system consists of the following parts: outdoor unit, hydro-box, water-tank (Water tanks are different for different methods) and the selection method is explained in detail in the instruction of hydro-box. Besides, This unit can connect with floor heating and solar water heater and please refer to the diagram B,C,D,E for connection methods.

Note:

① Connect outlet of hydro-box with outlet of water tank while connect inlet of hydro-box with inlet of water-tank.

② Connect gas pipe and liquid pipe of outdoor unit with refrigerants pipe of hydro-box according to their sizes

③ When the system needs to connect with floor heating system, install electromagnetic valves C and D which are respectively used for heating control of floor and waterway of water tank.

④ After the system has connected with floor heating, feeding nozzle of tap water and drain joint shall be installed due to their different waterways, which is shown as diagram D.

⑤ Horizontal distance between water heater and water tank shall be within 5m and drop height shall be not exceed 3m. If such values are exceeds their specified range, please contact with us. The recommended installaion method is that the water tank is installed on the bottom while the water heater is on the top.

⑥ The back water pump can be installed if needed which is used for keeping the water's temp inside the water pipe.

⑦ Please prepare materials according to the specifications above, PPR pipe is recommended if the cut-off valve is installed outside.

⑧ Only when the water heater has been fixed, the water pipeling can be installed. Keep the dust and other things away from the piping system.

⑨ After all pipelines have been installed, execute leak detection.If there is no leakage, execute insulation work to all pipelines, especially to the valve and pipe joints. Insulating cotton whose thickness is not less than 15mm is recommended.

⑩ Dependening on the pressure of tap water, water tank can provide hot water. Therefore, tap water is essential for using hot water.

⑪ Keep the cut-off valve of inlet of water tank open when using it.

5 INSTALLATION OF OUTDOOR UNIT

5.1 Hoisting of Unit

Transport the unit to a place as close as possible to the installing site before taking it out of the packaging box.

⚠ CAUTIONS!

Never put any object on top of the unit before and after installation.

To lift the machine with crane, please use two ropes to lift the outdoor unit.

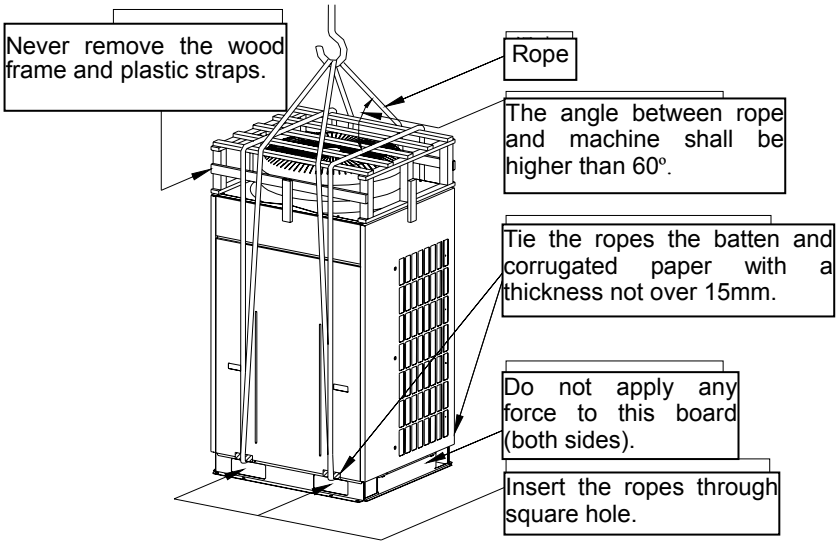
◆ Hoisting Method

The machine must be balanced when it is lifted. Check and ensure that the machine can be lifted up safely and stably.

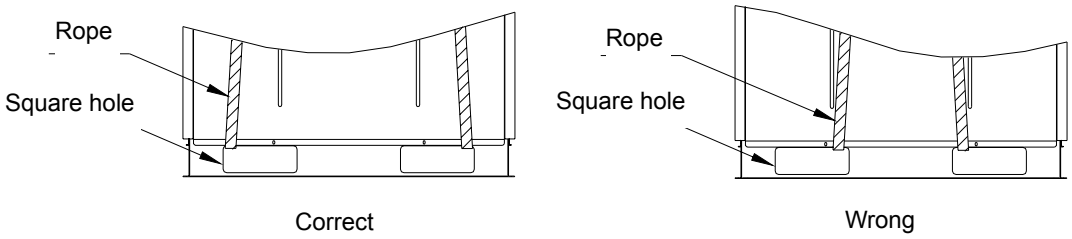
⚠ CAUTIONS!

Do not attach the ropes to the lower wood frame of the packaging box.

Never remove any packaging materials.
As shown, insert two ropes through the square holes on the machine and protect the machine with batten and corrugated paper.


Never remove the wood frame and plastic straps.
Rope
The angle between rope and machine shall be higher than 60°.
Tie the ropes the batten and corrugated paper with a thickness not over 15mm.
Do not apply any force to this board (both sides).
Insert the ropes through square hole.

- During lifting, the position of ropes is as shown below.
- Move the lower wood frame of the packaging box away and lift the unit to correct position.



5.1.1 Cautions for installation of side outdoor unit

To ensure good operation of the air conditioner, the selection of installing position must be in accordance with the following principles:

- The outdoor unit shall be so installed that the air discharged out of the outdoor unit will not flow back and that enough space shall be maintained around the machine for repair.
- The installing position shall be in good ventilation, so that the machine can breathe and exhaust enough air. Ensure that there is no obstruction at the inlet and outlet of the machine. If any, please remove the obstructions blocking the air inlet and outlet.
- Also ensure that the outlet air and noise from the air conditioner will not affect the neighbors.
- The outdoor unit must be lifted by using the designated lift hole. During lifting, take care to protect the air conditioner and avoid knocking the metal parts, thus to prevent rusting in the future.
- Avoid direct sunshine as it might be.
- The installing position must be able to drain the rainwater and the water generated from defrosting.
- The installing position must ensure that the machine will not be buried in the snow or affected by the wastes or oil mist.
- To meet the noise and vibration requirements, the outdoor unit shall be installed by using rubber damping pad or spring damper.
- The installing dimension shall comply with the installation requirements in these instructions. The outdoor unit must be fixed at the installing position.
- The installation shall be done by specialist technicians.

5.1.2 Cautions for installation of up outdoor unit

To ensure good operation of the air conditioner, the selection of installing position must be in accordance with the following principles:

- The outdoor unit shall be so installed that the air discharged out of the outdoor unit will not flow back and that enough space shall be maintained around the machine for repair.
- The installing position shall be in good ventilation, so that the machine can breathe and

exhaust enough air. Ensure that there is no obstruction at the inlet and outlet of the machine. If any, please remove the obstructions blocking the air inlet and outlet.

- Also ensure that the outlet air and noise from the air conditioner will not affect the neighbors.
- The outdoor unit must be lifted by using the designated lift hole. During lifting, take care to protect the air conditioner and avoid knocking the metal parts, thus to prevent rusting in the future.
- Avoid direct sunshine as it might be.
- The installing position must be able to drain the rainwater and the water generated from defrosting.
- The installing position must ensure that the machine will not be buried in the snow or affected by the wastes or oil mist.
- To meet the noise and vibration requirements, the outdoor unit shall be installed by using rubber damping pad or spring damper.
- The installing dimension shall comply with the installation requirements in these instructions. The outdoor unit must be fixed at the installing position.
- The installation shall be done by specialist technicians.

5.2 Selection of Installation Site

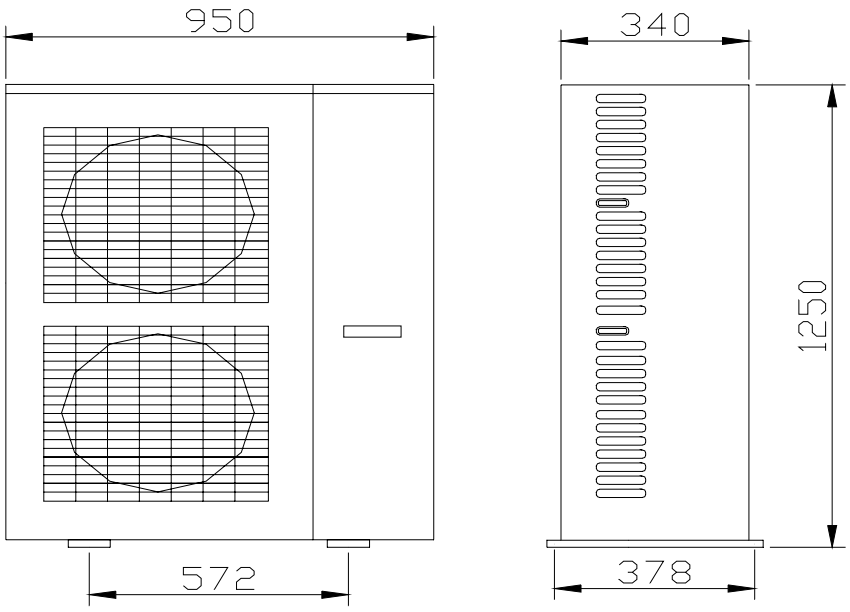
- The place with no residual air
- The place where the accessories can be securely fixed
- The place where the air will not obstruct the water inlet pipe or water outlet pipe
- The place that goes beyond the heating range of other heat sources
- The place where the wastewater can be safely drained
- The place where the noise and hot air will not affect the neighbors
- The place where the snow will not be piled
- The place where the water outlet pipe will not be blown by strong wind

Notes:

① Do not use guardrail on four sides. Leave 1m at least above the machine.
② In case of short-circuit risk, please install an adaptor changeable in air direction.
③ To avoid short circuiting, please provide adequate suction space when multiple machines are to be installed.
④ In the region with snow, the machine shall be installed in a frame or beneath the snow guard, thus to prevent snow piling on the machine.
⑤ Do not install the equipment in a region where any inflammable gas might leak.
⑥ The snow guard and other devices shall be designed and installed by the user.

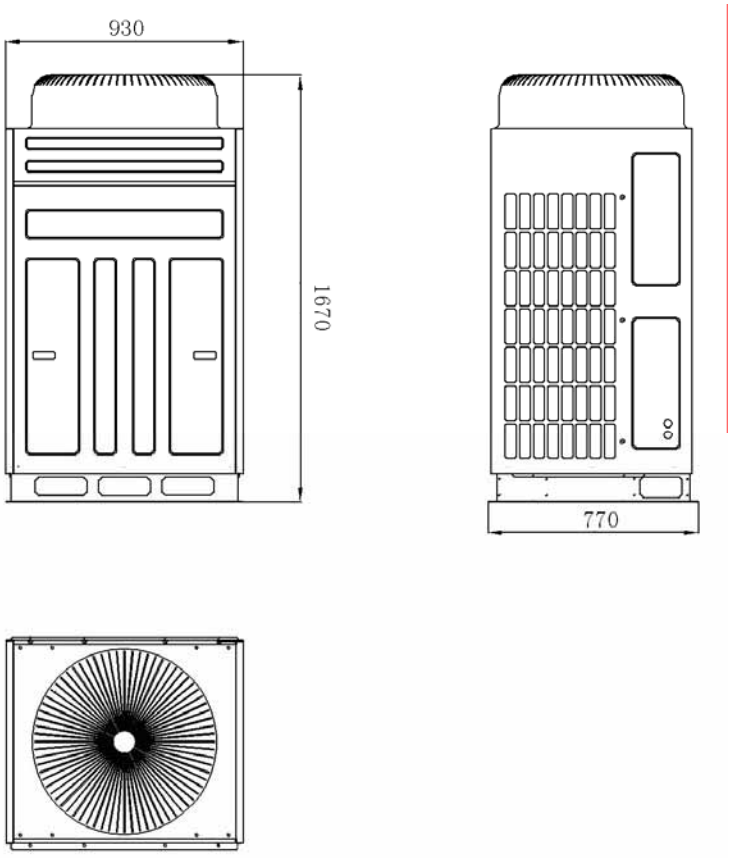
5.3 Dimension and Hole Site

◆ GMV-Pds100W/Na-K，GMV-Pds120W/Na-K, GMV-Pds140W/Na-K, GMV-Pds160W/Na-K



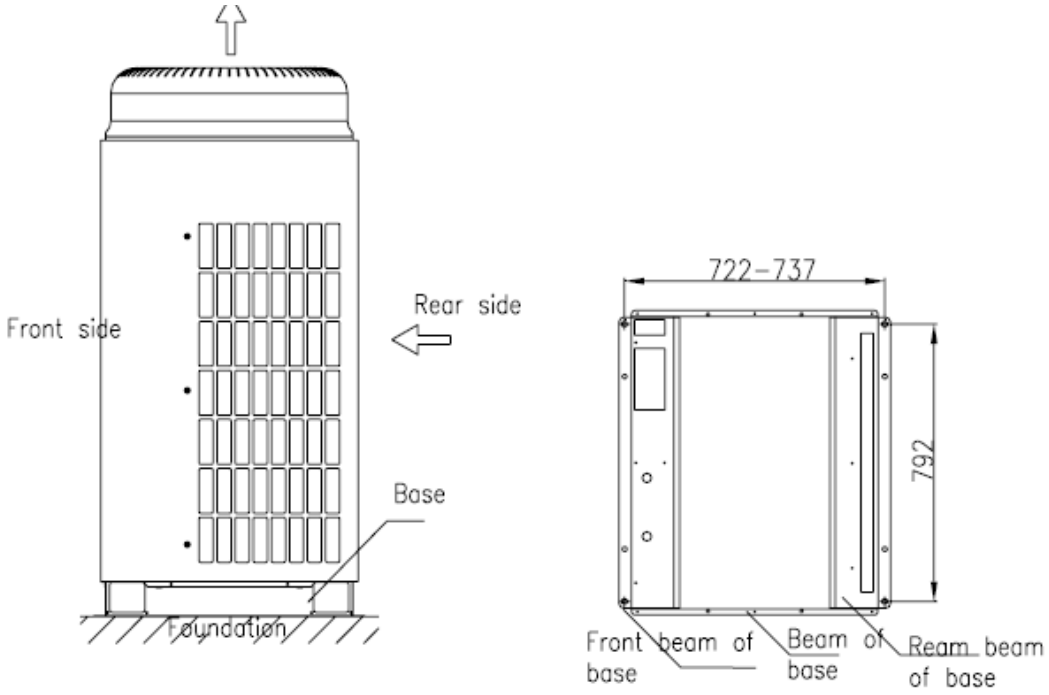
Fix the support legs and underframe of the unit with M 12 bolts and install the unit on the concrete foundation with 10cm height.

◆ GMV-Pds224W/Na-M.GMV-Pds280W/Na-M



（The picture is just for reference and the practicality is the standard ）

◆ Hole Site of Outdoor Unit

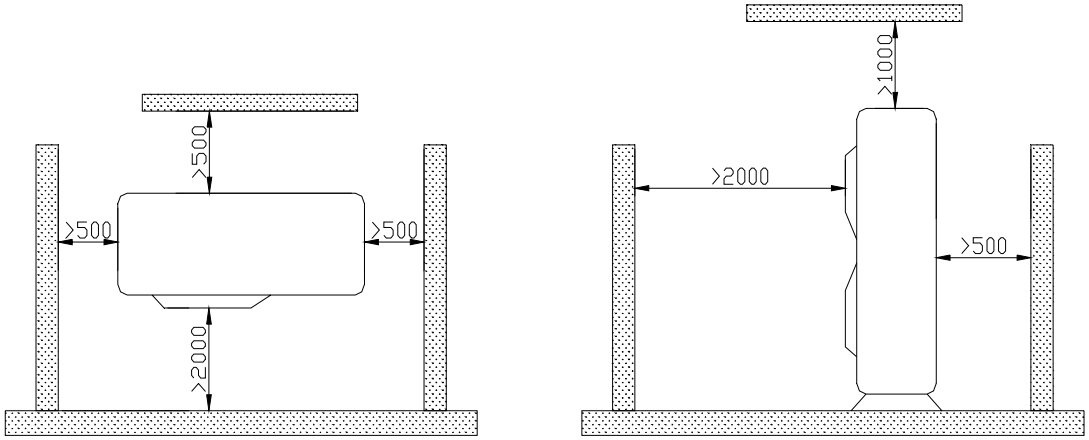


GMV-Pds224W/Na-M.GMV-Pds280W/Na-M Outdoor Unit Installation Holes

5.4 Space dimension for installation of the unit is shown below.

5.4.1 Installation Dimension of the Unit with Side Air Outlet

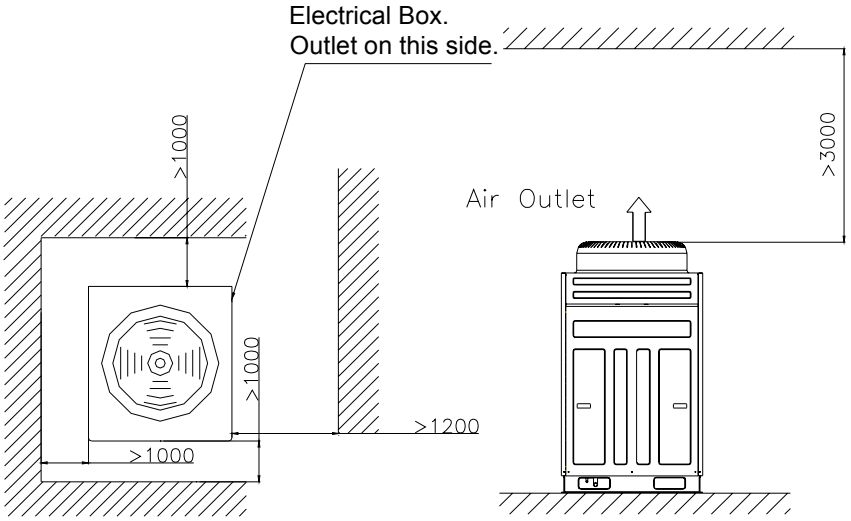
☆ GMV-Pds100W/Na-K.GMV-Pds120W/Na-K.GMV-Pds140W/Na-K.GMV-Pds160W/Na-K Installation Dimension of Outdoor Unit



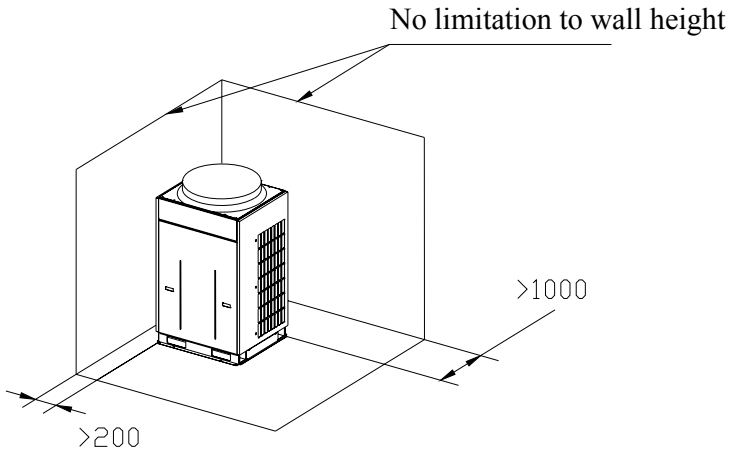
5.4.2. Installation Dimension of the Unit with Top Air Outlet

☆ Outdoor Unit Installation Space Dimension

GMV-Pds224W/Na-M.GMV-Pds280W/Na-M Outdoor Unit Installation Space Dimension



If the unit is surrounded by walls, the above basic requirements for installation should be met. For the state that front side and right/left side of the outdoor unit is open:



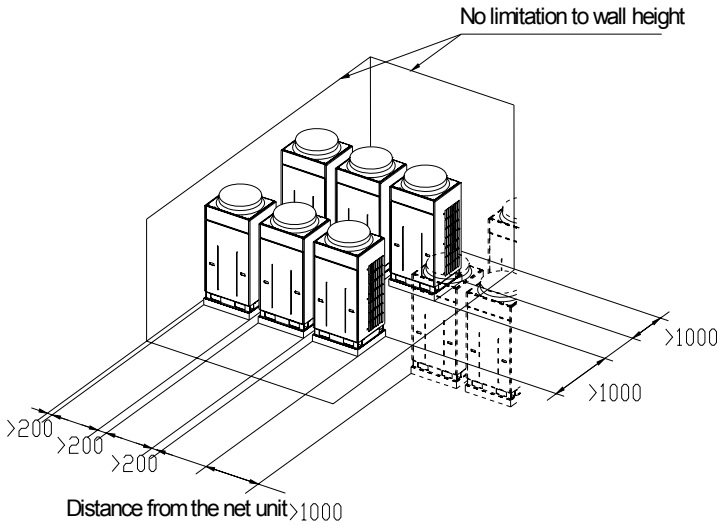
Keep crown wall (air damper and suchlike barrier), if there is, 3000mm above from the top of unit. Keep it 1500mm above from the top of the unit whose front, rear, left and right side are in the open air. If not, a piece of return duct should be connected for smooth ventilation.

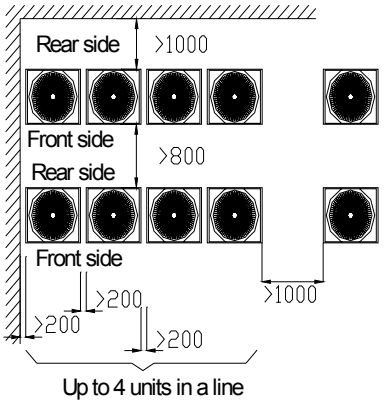
☆Installation space for multiple outdoor units

Keep top of units open, without air damper suchlike for smooth ventilation.

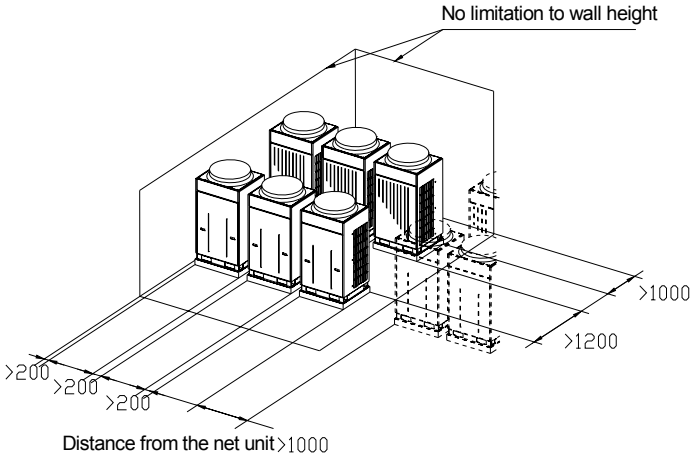
For the state that front side and right/left side of the outdoor units are open:

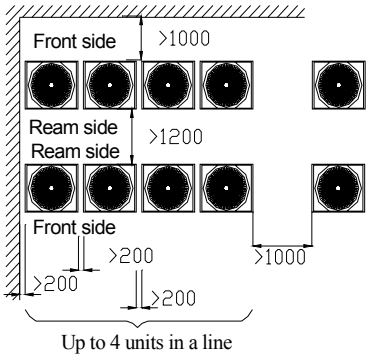
Install the unit at the same directions:





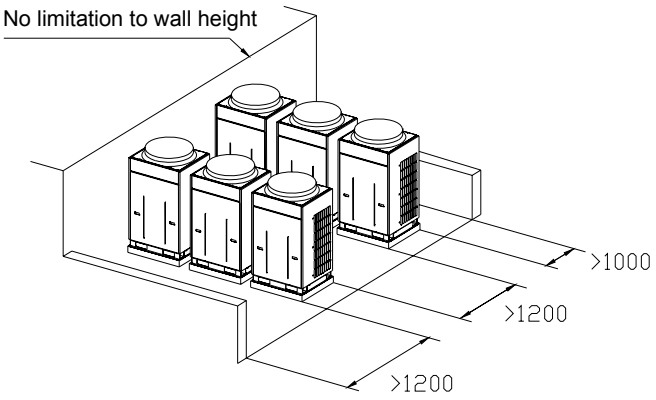
Install the units back to back:

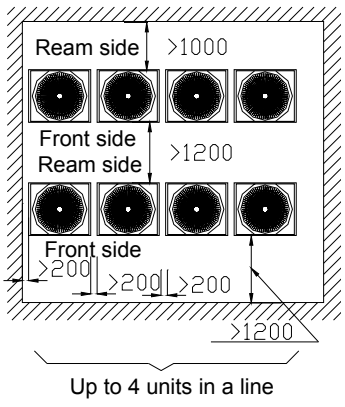




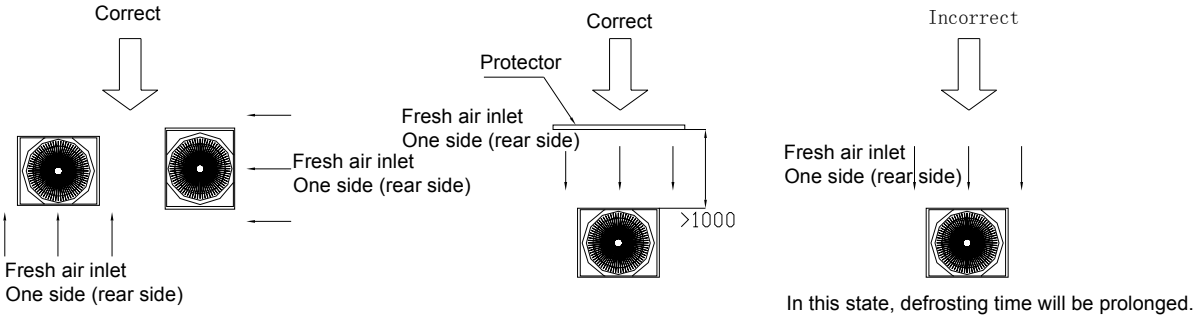
For the state that the units are surrounded by walls:

It is recommended to install the units at the same directions.



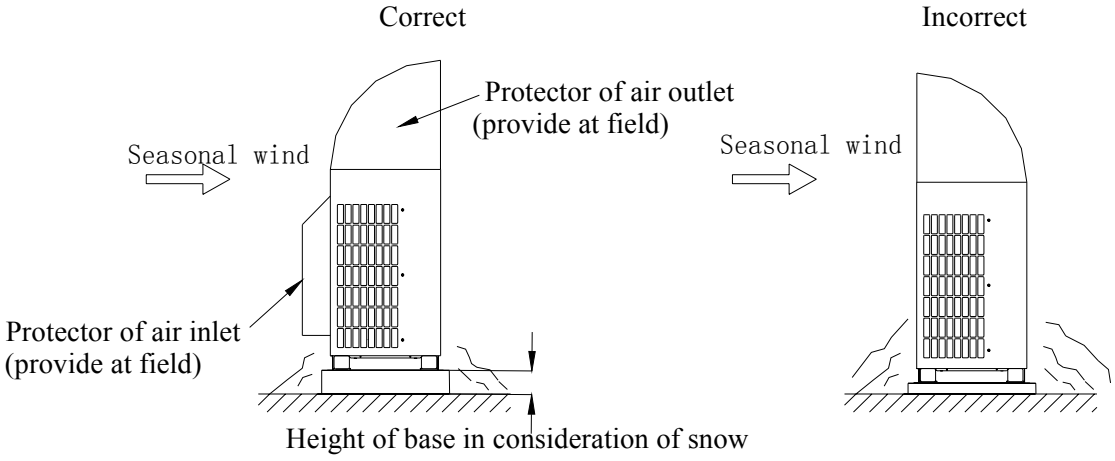


☆In consideration of seasonal wind during installation of outdoor units



☆ In consideration of snow during installation of outdoor units

It is required to equip protectors on air outlet and air inlet and a higher foundation base to prevent snow from covering air inlet and outlet.



6 INSTALLATION OF INDOOR UNIT

6.1 Duct Type

6.1.1 Selection of installation site

● The selection of the installation place of the air conditioner unit

The installation must accord with the national and local safe criterion.
Since the quality of installation would affect the operation directly, user should contact the seller and have the conditioner installed and tested by the professional install personnel according to the install instruction instead of install by himself/herself.
Only connect the power after all the installation works are finished.

● The selection of the installation place of the indoor unit

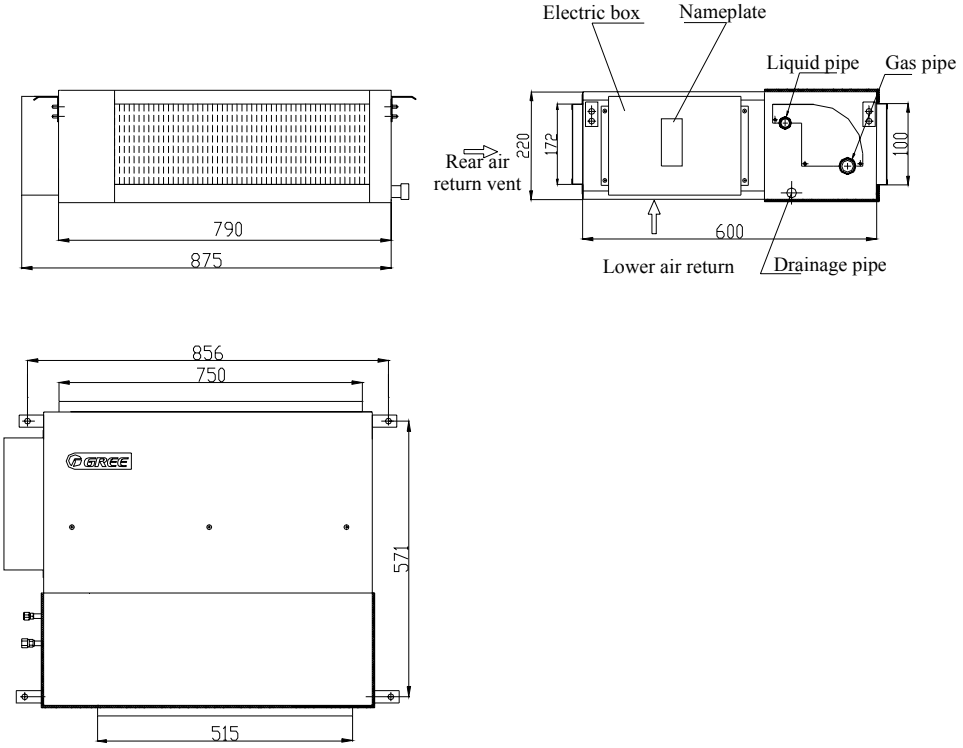
☆ Prevent direct sun burn.
☆ Make sure that the top steeve, ceiling, and the structure of the construction etc. is strong enough to bear the weight of the unit.
☆ The drainage hose is easy to drain.
☆ The air flow is not blocked at the outlet and intake vents.
☆ The connecting pipe indoors and outdoors can be led to outside conveniently.
☆ The unit cannot be installed in the place where flammable or explosive thing is stored or the place where there is leakage of flammable or explosive gas.
☆ The unit cannot be installed in the place where there is corrupt gas and serious dust, saline fog, lampblack and high humidity.

Note!

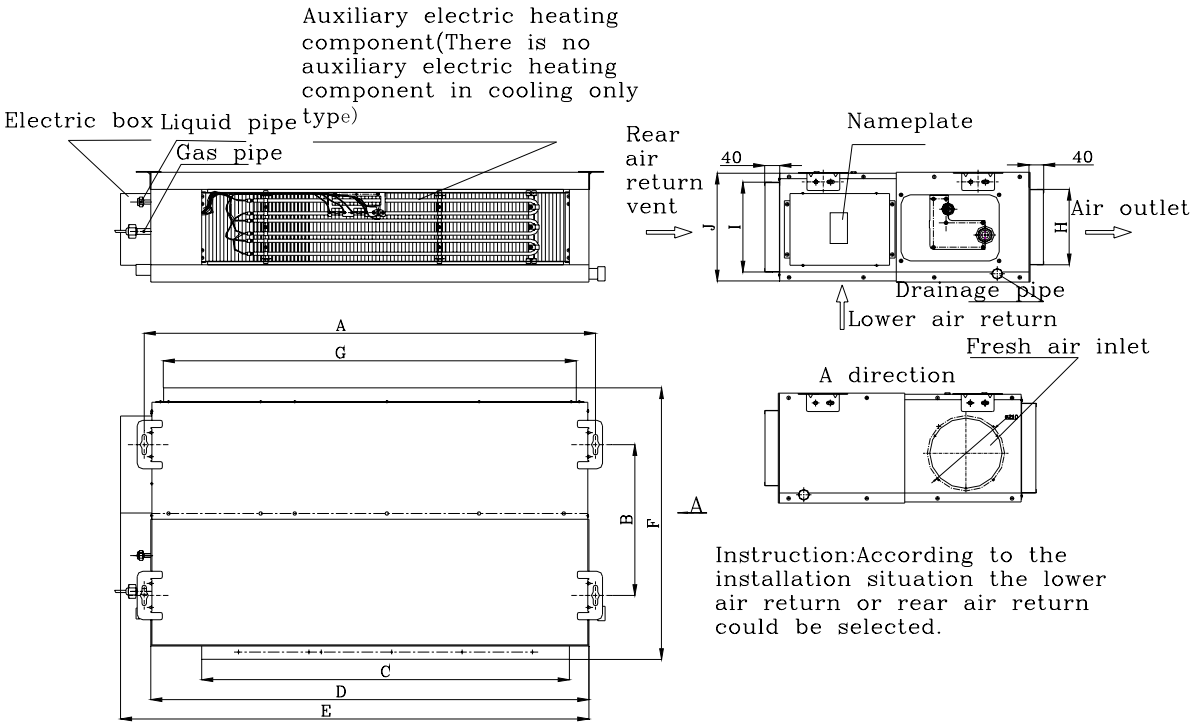
The air conditioner unit installed in the following place may have malfunction, if it is unpreventable please contact the Nominated Repair Center Of Gree Electric Appliances, Inc. Of Zhuhai.

①the place with greasy all around;
②the seashore place with salinity and alkali;
③the place with vulcanized gas(such as vulcanized hot spring);
④the place with high frequency equipment (such as wireless equipment, electric welding machine and medical treatment equipment);
⑤the place with special environment.

1.The following figure is applicable to the indoor units of
GMV(L)-R22P/Na-K, GMV(L)-R25P/Na-K, GMV(L)-R28P/Na-K, GMV(L)-R32P/Na-K, GMV(L)-R36P/Na-K，GMV(L)-R40P/Na-K,



2.The following figure is applicable to the indoor units of
GMV(L)-R45P/Na-K, GMV(L)-R50P/Na-K, GMV(L)-R56P/Na-K, GMV(L)-R63P/Na-K, GMV(L)-R71P/Na-K, GMV(L)-R80P/Na-K, GMV(L)-R90P/Na-K, GMV(L)-R100P/Na-K, GMV(L)-R112P/Na-K, GMV(L)-R125P/Na-K, GMV(L)-R140P/Na-K



Model	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)	F(mm)	G(mm)
GMV（L）-R45P/ Na-K	932	430	738	904	980	736	738
GMV（L）-R50P/ Na-K	932	430	738	904	980	736	738
GMV（L）-R56P/ Na-K	1112	420	918	1070	1155	756	1008
GMV（L）-R63P/ Na-K	1112	420	918	1070	1155	756	1008
GMV（L）-R71P/ Na-K	1112	420	918	1070	1155	756	1008
GMV（L）-R80P/ Na-K	1112	420	918	1070	1155	756	1008
GMV（L）-R90P/ Na-K	1382	420	1155	1340	1425	756	1278
GMV（L）-R100P/ Na-K	1382	420	1155	1340	1425	756	1278
GMV（L）-R112P/ Na-K	1382	420	1155	1340	1425	756	1278
GMV（L）-R125P/ Na-K	1382	420	1155	1340	1425	756	1278
GMV（L）-R140P/ Na-K	1382	420	1155	1340	1425	756	1278

Model	H(mm)	I(mm)	J(mm)	Liquid pipe(inch)	Gas pipe(inch)	Drainage pipe（Outer ×Inner）
GMV(L)-R45P/ Na-K	125	207	266	φ1/4 "	φ1/2 "	φ30×φ27
GMV(L)-R50P/ Na-K	125	207	266	φ1/4 "	φ1/2 "	φ30×φ27
GMV(L)-R56P/ Na-K	207	250	300	φ3/8 "	φ5/8 "	φ30×φ27
GMV(L)-R63P/ Na-K	207	250	300	φ3/8 "	φ5/8 "	φ30×φ27
GMV(L)-R71P/ Na-K	207	250	300	φ3/8 "	φ5/8 "	φ30×φ27
GMV(L)-R80P/ Na-K	207	250	300	φ3/8 "	φ5/8 "	φ30×φ27
GMV(L)-R90P/ Na-K	207	250	300	φ3/8 "	φ5/8 "	φ30×φ27
GMV（L）-R100P/ Na-K	207	250	300	φ3/8 "	φ5/8 "	φ30×φ27
GMV（L）-R112P/ Na-K	207	250	300	φ3/8 "	φ5/8 "	φ30×φ27
GMV（L）-R125P/ Na-K	207	250	300	φ3/8 "	φ5/8 "	φ30×φ27
GMV（L）-R140P/ Na-K	207	250	300	φ3/8 "	φ5/8 "	φ30×φ27

3.The following figure is applicable to the indoor units of GMV(L)-R22P/NaB-K.GMV(L)-R22PS/NaB-K.GMV(L)-R28P/NaB-K.GMV(L)-R28PS/NaB-K.GMV(L)-R36P/NaB-K.GMV(L)-R36PS/NaB-K。

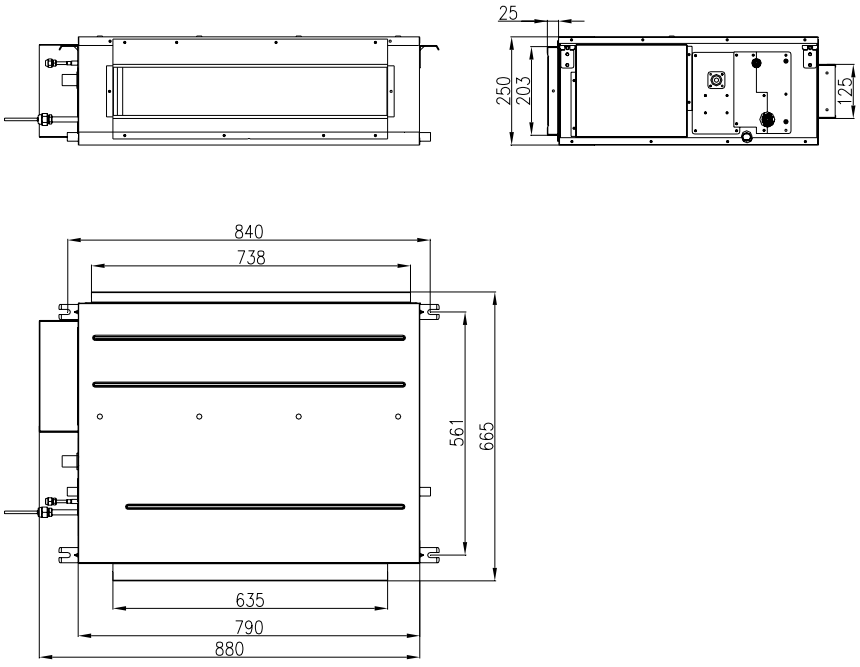


Fig.1

4.The following figure is applicable to the indoor units of GMV（L）-R45P/NaB-K、 GMV（L）-R56P/NaB-K、GMV（L）-R71P/NaB-K、GMV（L）-R90P/NaB-K、GMV （L） -R112P/NaB-K、GMV （L） -R140P/NaB-K、GMV （L） -R45PS/NaB-K、 GMV （L） -R56PS/NaB-K、GMV（L）-R71PS/NaB-K、GMV（L）-R90PS/NaB-K、GMV（L）-R112PS/NaB-K、GMV （L） -R140PS/NaB-K.

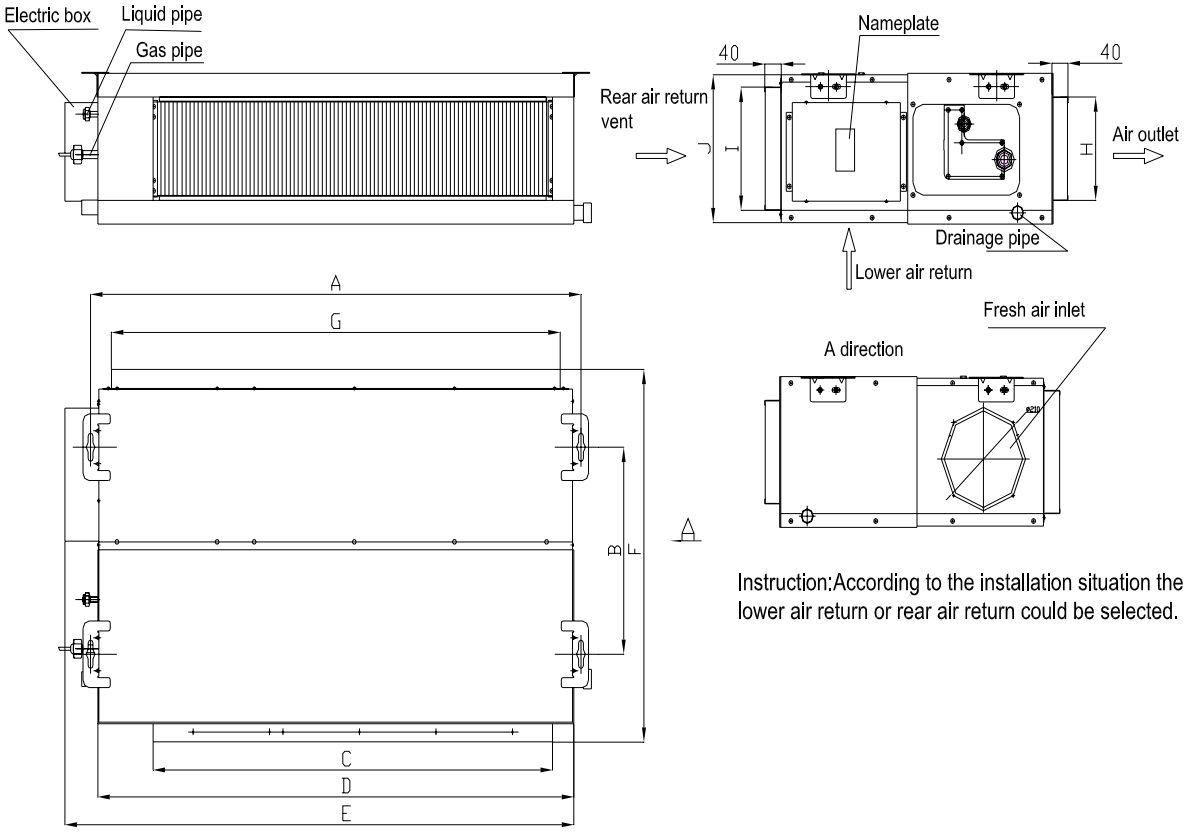


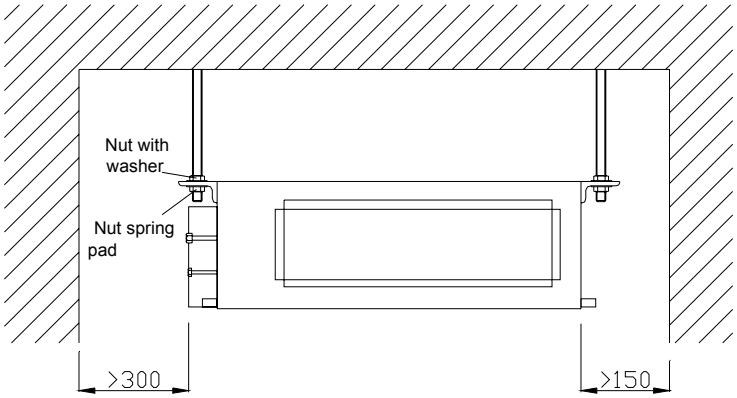
Fig.2

1、Look into from air outlet vent, the wiring is in the left of the unit.

2、The method of wind circle can be selected to bottom back wind or rear back wing according to the installation circumstance of the reality.

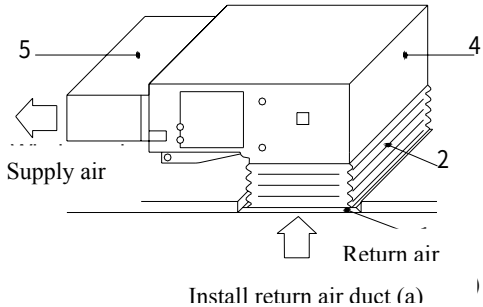
型号	A	B	C	D	E	F	G	H	I	J
GMV(L)-R45P/NaB-K GMV(L)-R45PS/NaB-K	932	430	738	892	980	721	738	125	203	266
GMV(L)-R56P/NaB-K、GMV(L)-R71P/NaB-K GMV(L)-R56PS/NaB-K、GMV(L)-R71PS/NaB-K	1114	420	918	1074	1155	736	1010	207	207	300
GMV(L)-R90P/NaB-K、GMV(L)-R112P/NaB-K GMV(L)-R90PS/NaB-K、GMV(L)-R112PS/NaB-K GMV(L)-R140P/NaB-K 、 GMV(L)-R140PS/NaB-K	1382	420	1155	1340	1425	736	1280	207	250	300

6.1.2Installation space requirements

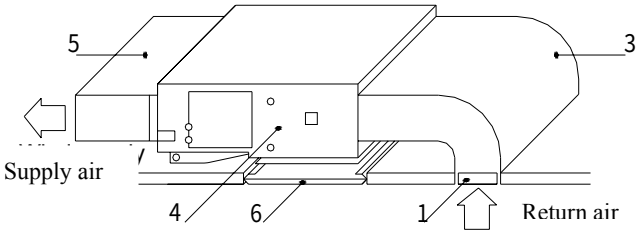


6.1.3 Installation demonstration

① Selection of style of return air



Install return air duct (a)

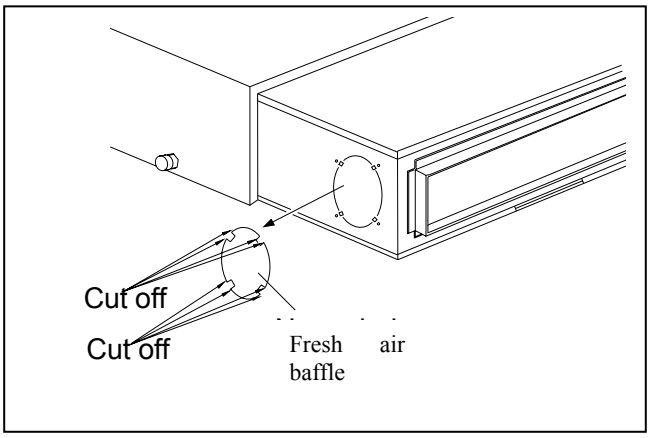


Install return air duct (b)

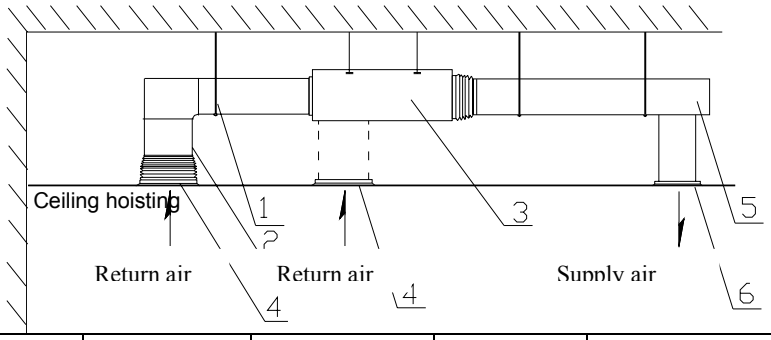
No.	Name	No.	Name
1	Return air inlet (with filter)	4	Indoor unit
2	Canvas air duct	5	Supply air duct
3	Return air duct	6	Test grill

② Installation of fresh air duct

1. When fresh air duct is need to be connected, cut the fresh air baffle as shown in fig.8. Plug up the gap of fresh air baffle by sponge if fresh air duct is not used.
2. Install the circle flange so that the fresh air duct can be connected as fig.9.
3. Well sealed and heat preservation should be done for both air duct and round air duct.
4. Fresh air should be the air after filtrate treatment.



③ Installation of air supply duct

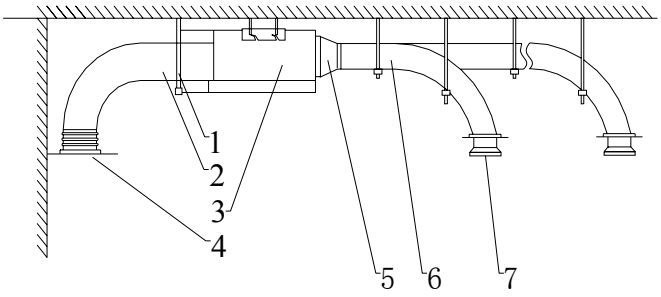


No.	1	2	3	4	5	6
Name	Hoisting	Return air duct	Ducted type indoor unit	Return air inlet	Supply air bent	Air outlet

Note：Fig.6 only shows the install of rear return air inlet, button return air inlet can also been installed according to the actual installation need. The method of installation is similar to the rear return air inlet's. The supply air duct, which is rectangle or circle and connect with the air inlet of the indoor unit, should at least keep one open. The circle air duct type should adopt circle preservation pipe to transmit cool (heat) air to room. The circle air duct should add a transitionary pipe, which size should match the size of air supply duct of the unit. After connecting the transitionary pipe, install the circle air outlet vent connection pipe, whose longest length to every individual air outlet vent should not over 10m. Ducted type indoor unit model 70 can share 3 trainsitional pipe, while model 100,120 can share 4. The transitional pipe, whose straight length is 200, and circle air outlet connection pipe, whose diameter is 200, produced by our company, can be ordered separately as standard fittings. Model 50 and the model below it do not share circle air duct. The following is the diagram for install circle air duct.

⚠ **Note: 1, The longest length of air duct means the general length of the wing supply pipe to the farthest air supply vent plus the general length of return air duct to the relative farthest return air vent.**

2, To the unit with auxiliary heater, if the circle air duct is need to connected, the straight length of transitional air duct should not shorter than 200mm.



Number	1	2	3	4	5	6	7
Name	Screw	Return air duct	Ducted type indoor unit	Return air inlet	Transitional air duct	Supply air duct	Air outlet

④ Setting hole for maintenance

After installation of hidden duct-type unit, manhole must be provided in ceiling on the electric box side of the indoor unit. In respect to the manhole, the following points must be taken into consideration:

- For access, the manhole size shall be larger than 500mm×500mm.
- The manhole must be at a possible easily accessible for repair of electric elements and pipe.
- The air inlet may also be used as manhole for repair of motor.

6.2 4-way cassett type Unit

6.2.1 Selection of installation site

1. Obstruct should put away from the inlet or outlet of the indoor unit so that the airflow can be blown though all the room.
2. Make sure that the installation had accorded with the requirement of the schematic diagram of installation spaces.
3. Select the place which can stand 4 times of the weight of the indoor unit and would not increase the operating noise and oscillate.
4. The horizontal installation place should be guaranteed.
5. Select the place where easy drainage of condensated coagulated water, and easy connection with outdoor unit.
6. Make sure that there are enough space for care and maintenance. Make sure that the distance between the indoor unit and ground is above 1800mm.
7. When installing the steeve bolt, check if the installation place can stand the weight 4 times of the unit's. If not, reinforce before installation. (Refer to the installarion cardboard and find where should be reinforced)

There will be lots of lampblack and dust sticked on the acentric, heat exchanger and water pump in dining room and kitchen, which would reduce the capacity of heat exchanger, thus leading water leakage and abnormal operation of the water pump. The following treatments should be taken under this circumstance:

1. Ensure that the smoke trap above cooker has enough capacity to obviate lampblack to prevent the indraft of the lampblack by the air conditioner.
2. Keep the air conditioner far from the kitchen so that the lampblack would not be drafted in by the air conditioner.

Important notices:

- To guarantee the good performance, the unit must be installed by professional personnel according with this instruction.
- Please contact the local authorized repair department of Gree before installation. Any malfunction caused by the unit that is installed by unauthorized center would not be treated on time by the inconvenience of the business contact.

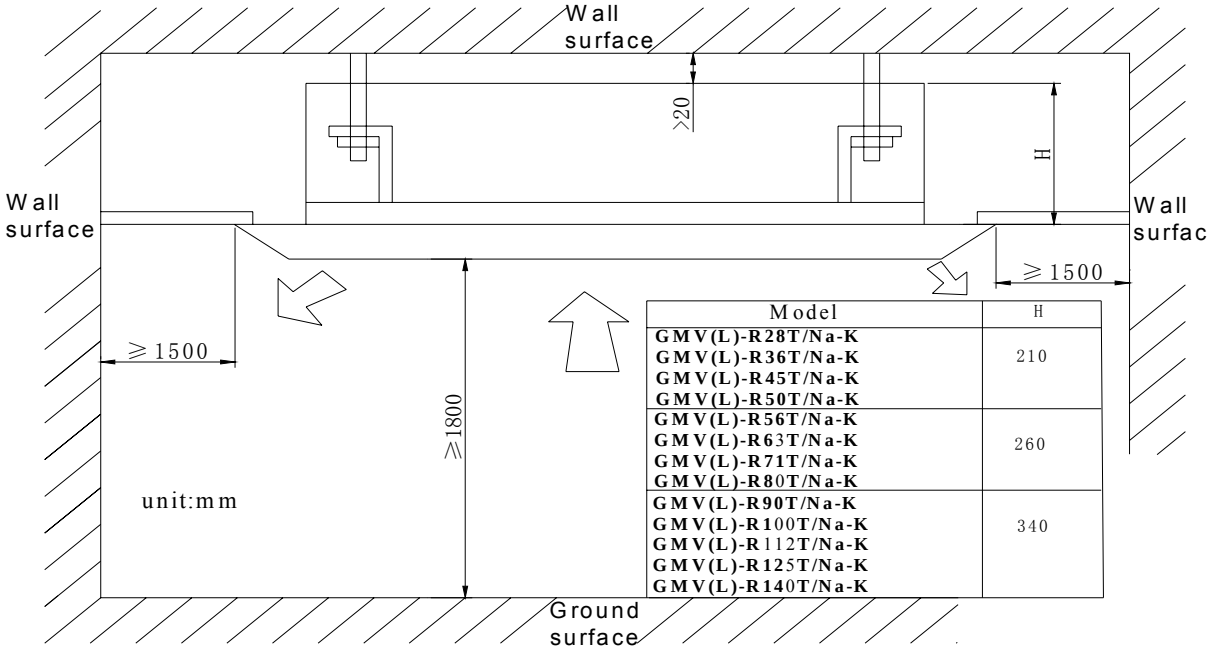
6.2.2 Dimensions Data

GMV(L)-R28T/Na-K, GMV(L)-R36T/Na-K, GMV(L)-R45T/Na-K, GMV(L)-R50T/Na-K, GMV(L)-R56T/Na-K, GMV(L)-R63T/Na-K, GMV(L)-R71T/Na-K, GMV(L)-R80T/Na-K, GMV(L)-R90T/Na-K, GMV(L)-R100T/Na-K, GMV(L)-R112T/Na-K, GMV(L)-R140T/Na-K.

Package Dimension / Model	Width (mm)	Depth (mm)	Height (mm)
GMV(L)-R28T/Na-K	950	950	210
GMV(L)-R36T/Na-K	950	950	210
GMV(L)-R45T/Na-K	950	950	210
GMV(L)-R50T/Na-K	950	950	210
GMV(L)-R56T/Na-K	950	950	310
GMV(L)-R63T/Na-K	950	950	310
GMV(L)-R71T/Na-K	950	950	310
GMV(L)-R80T/Na-K	950	950	310
GMV(L)-R90T/Na-K	950	950	340
GMV(L)-R100T/Na-K	950	950	340
GMV(L)-R112T/Na-K	950	950	340
GMV(L)-R125T/Na-K	950	950	340
GMV(L)-R140T/Na-K	950	950	340
GMV(L)-R22T/NaA-K	650	650	230
GMV(L)-R28T/NaA-K	650	650	230
GMV(L)-R36T/NaA-K	650	650	230
GMV(L)-R45T/NaA-K	650	650	230

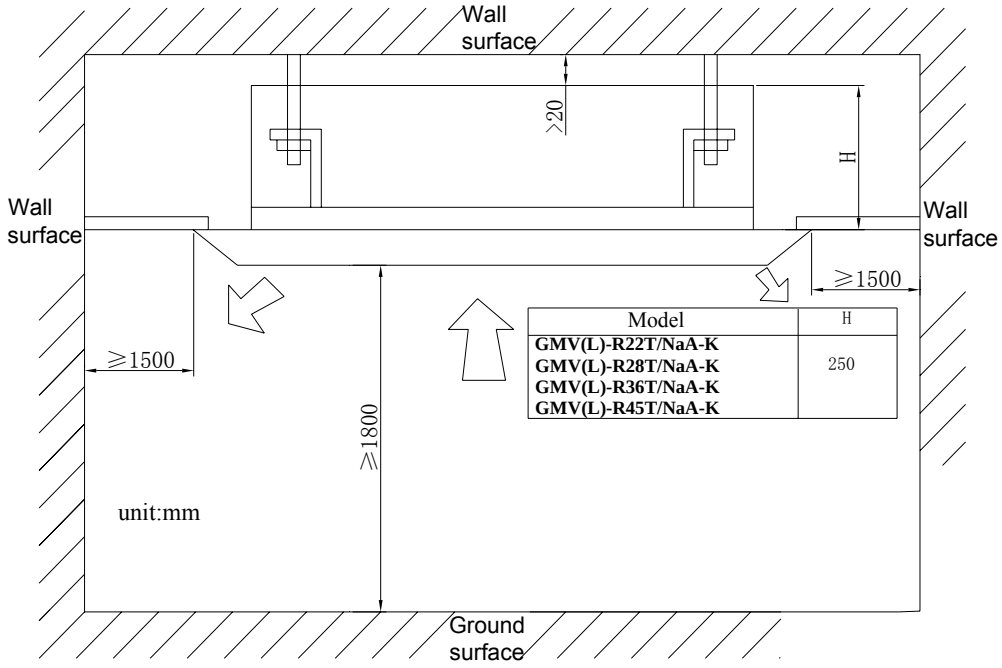
6.2.3 Installation space requirements

GMV(L)-R28T/Na-K, GMV(L)-R36T/Na-K, GMV(L)-R45T/Na-K, GMV(L)-R50T/Na-K, GMV(L)-R56T/Na-K, GMV(L)-R63T/Na-K, GMV(L)-R71T/Na-K, GMV(L)-R80T/Na-K, GMV(L)-R90T/Na-K, GMV(L)-R100T/Na-K, GMV(L)-R112T/Na-K, GMV(L)-R140T/Na-K.



Model	H
GMV(L)-R28T/Na-K GMV(L)-R36T/Na-K GMV(L)-R45T/Na-K GMV(L)-R50T/Na-K	210
GMV(L)-R56T/Na-K GMV(L)-R63T/Na-K GMV(L)-R71T/Na-K GMV(L)-R80T/Na-K	260
GMV(L)-R90T/Na-K GMV(L)-R100T/Na-K GMV(L)-R112T/Na-K GMV(L)-R125T/Na-K GMV(L)-R140T/Na-K	340

GMV(L)-R22T/NaA-K, GMV(L)-R28T/NaA-K, GMV(L)-R36T/NaA-K, GMV(L)-R45T/NaA-K.



Model	H
GMV(L)-R22T/NaA-K GMV(L)-R28T/NaA-K GMV(L)-R36T/NaA-K GMV(L)-R45T/NaA-K	250

6.2.4 Installation demonstration

1 The primary step for installing the indoor unit.

☆ When attaching the hoisting stand on hoisting screw, do use nut and gasket individually at the upper and lower of the hoisting stand to fix it. The use of gasket anchor board can prevent gasket breaking off.

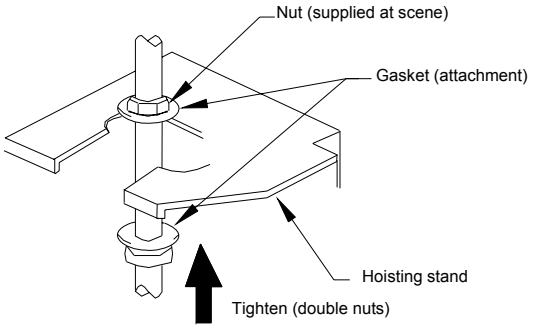
2 Use installation cardboard

☆ Please refer to the installation cardboard about the dimension of ceiling opening.

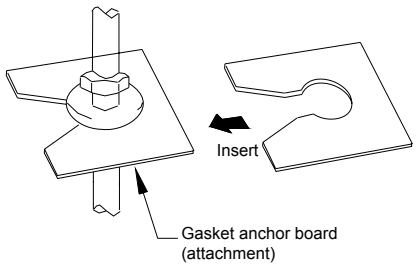
☆ The central mark of the ceiling opening is marked on the install cardboard.

☆ Install the installation cardboard on the unit by bolt (3 piece), and fix the angle of the drainage

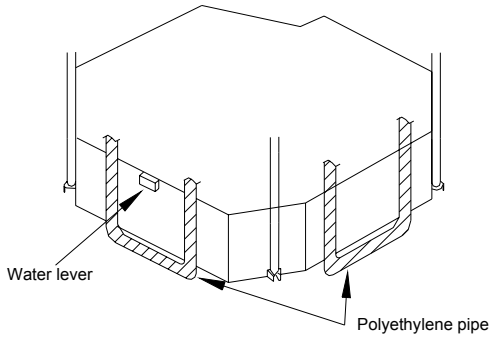
hose at the outlet vent by bolt.
3 Adjust the unit to the suitable installing place. (Refer to the fig.2)
4 Check if the unit is horizontal.
☆ Inner drainage pump and bobber switch are included in the indoor unit. Check if 4 angles of each unit are horizontal by water level. (If the unit is slant toward the opposite of the coagulate water flow, there may be malfunction of the bobber switch and leading water drop.)
5 Remove the gasket anchor board used to prevent gasket breaking off and tighten the nut on it.
6 Remove the installation cardboard.

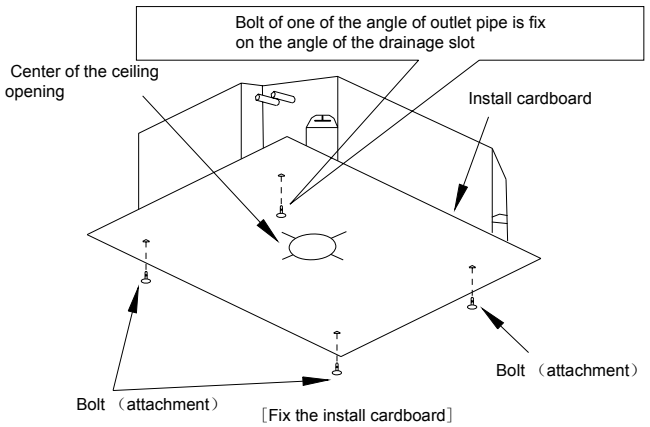


［Fix the hoisting stand firmly］



［Fix the gasket firmly］




Bolt of one of the angle of outlet pipe is fix
on the angle of the drainage slot
Center of the ceiling
opening
Install cardboard
Bolt （attachment）
Bolt （attachment）
［Fix the install cardboard］

Note！

● Please **do tighten the nuts and bolts to prevent air conditioner breaking off**.
● **Connect the refrigerant pipe**
☆ When connecting the pipe to the unit or remove it from the unit, please do use both spanner and torque wrench. as shown in fig.3.
☆ When smearing both inside and outside of the flare nut with antifreezing motor oil, screw it by hand and then tighten it with spanner.
☆ Refer to form 1 to check if the wrench has been tightened (too tight would mangle the nut and lead leakage).
☆ Examine the connection pipe for gas leakage, and then take the treatment of heat insulation, as shown in the fig.3.
☆ Only use median sponge to entwine the wiring interface of the gas pipe and heat preservation sheath of the gas collection pipe.

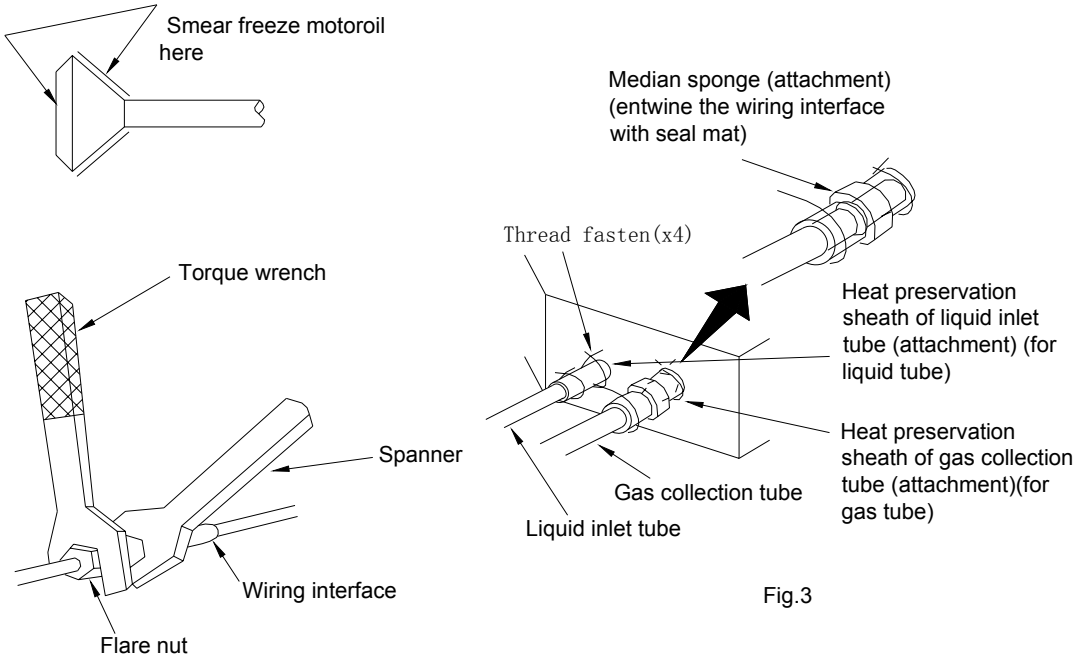

Smear freeze motoroil here
Median sponge (attachment) (entwine the wiring interface with seal mat)
Thread fasten(x4)
Torque wrench
Heat preservation sheath of liquid inlet tube (attachment) (for liquid tube)
Spanner
Heat preservation sheath of gas collection tube (attachment)(for gas tube)
Gas collection tube
Liquid inlet tube
Wiring interface
Flare nut

Fig.3

Form 1: The tightening torque needed for tightening nut

Diameter（Inch）	Surface thickness（mm）	Tightening torque (N.m)
Φ1/4"	≥0.5	15-30 (N·m)
Φ3/8"	≥0.71	30-40 (N·m)
Φ1/2"	≥1	45-50 (N·m)
Φ5/8"	≥1	60-65 (N·m)
Φ3/4"	≥1	70-75 (N·m)

● Drainage hose

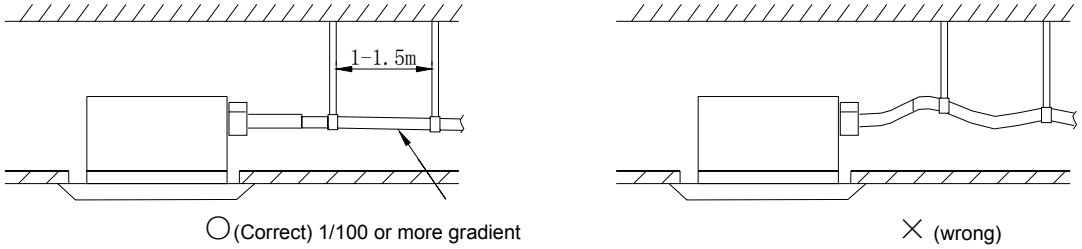
1. Installing the drain hose

☆ The diameter of the drainage hose should be equal or bigger than the connection pipe's. (The diameter of polythene pipe: Outer diameter 25mm Surface thickness ≥1.5mm)

☆ Drainage hose should be short and drooping gradient should be at least 1/100 to prevent the formation of air bubble.

☆ If drainage hose cannot has enough drooping gradient, drain raising pipe should be added.

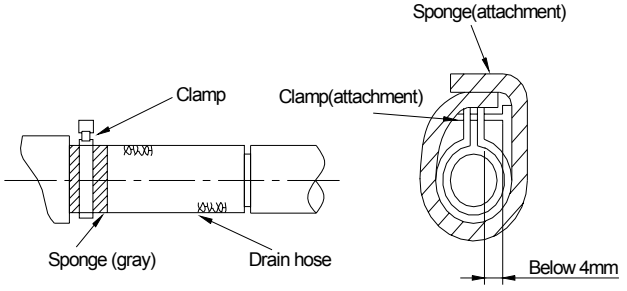
☆ To prevent bent of the drain hose, the distance between hoisting stands should is 1 to 1.5m.



☆ Use the drainage hose and clamp attached. Insert the drainage hose to the drain vent, and then tighten the clamp.

☆ Entwine the big sponge on the clamp of drainage hose to insulate heat.

☆ Heat insulation should be done to indoor drainage hose.

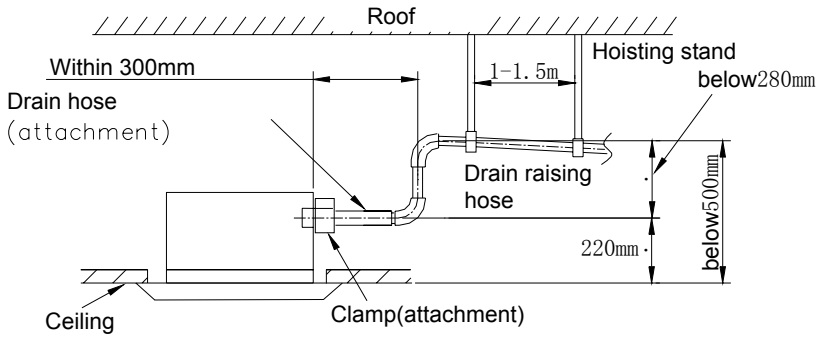


Drain stepup pipe note

☆ The installation height of the drain raising pipe should less than 280mm.

☆ The drain raising pipe should form a

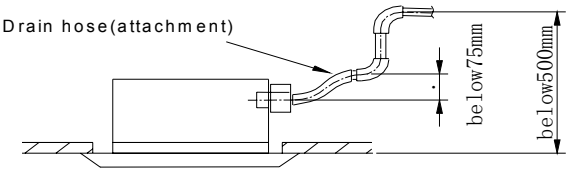
right angle with the unit, and distance to unit should not be beyond 300mm.

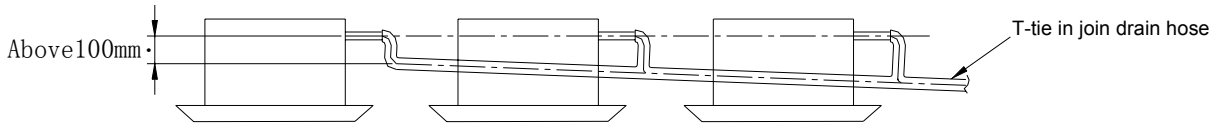


Instruction

☆ The slant gradient of the attached drainage hose should be within 75mm so that the drain hole doesn't has to endure the unnecessary outside force.

☆ Please install the drainage hose according to the following process if several drain hoses connected together.





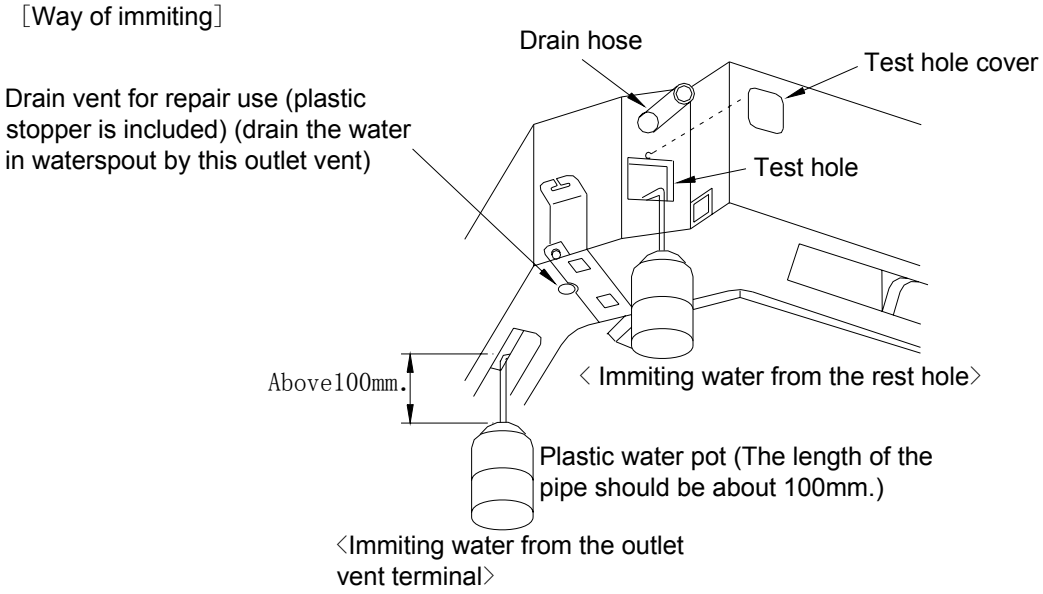
The specs of the selected join drain hose should fits the running capacity of the unit.

2 Check the smoothness of drain after installation.

☆ Check the drain state by immitting 600cc water slowly from the outlet or test hole.

☆ Check the drain in the state of refrigerating after installation of the electric circuit.

［Way of immiting］


Drain hose
Test hole cover
Drain vent for repair use (plastic stopper is included) (drain the water in waterspout by this outlet vent)
Test hole
Above100mm.
〈 Immiting water from the rest hole〉
Plastic water pot (The length of the pipe should be about 100mm.)
〈Immiting water from the outlet vent terminal〉

6.3 1-way cassett type Unit

6.3.1 Selection of installation site

1. Obstruct should be away from the air intake or outlet vent of the indoor unit so that the airflow blow all over the place of the room.

2. Make sure the installation of the indoor unit accords with the requirement for installation dimension drawing.

3. Select the place which can withstand 4 times weight of the indoor unit and would not increase the operating noise and shake.

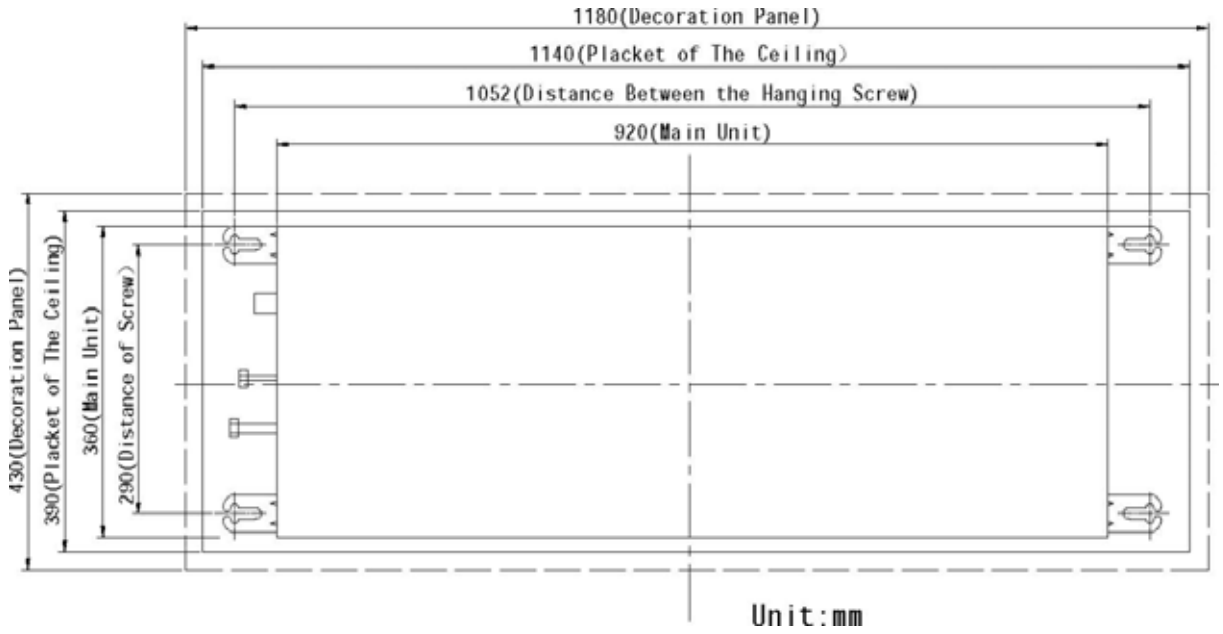
4. The installation place should be horizontal.

5. Select the place, where coagulated water is easy to discharge and outside unit to be connected.

6. Above 18000mm between the earth and indoor unit should be ensured for maintenance and repair.

7. Use hoisting screw to check if the installation place can withstand 4 times weight of the units and strengthen it before installing.

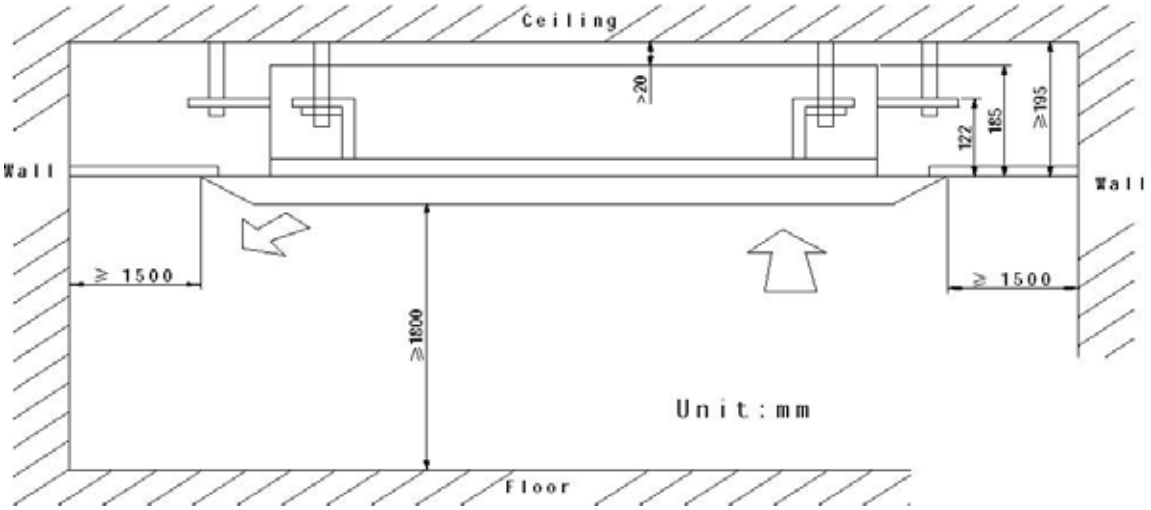
6.3.2 Dimensions Data



Important notice:

Drilling the hole of the ceiling and installing the units must be operated by professionals

6.3.3 Clearance data



6.3.4 Installation demonstration

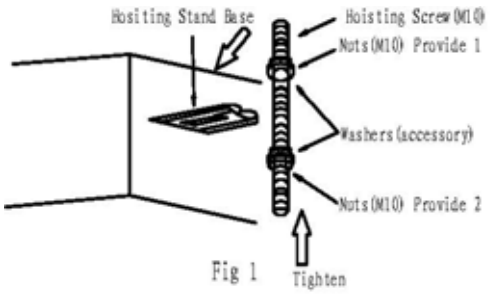
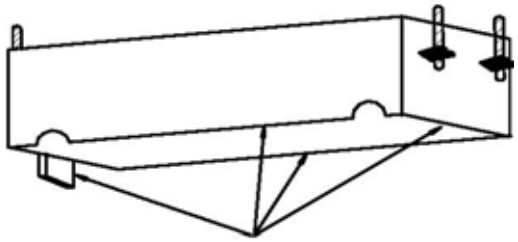


Fig 1



Water Level

Fig 2

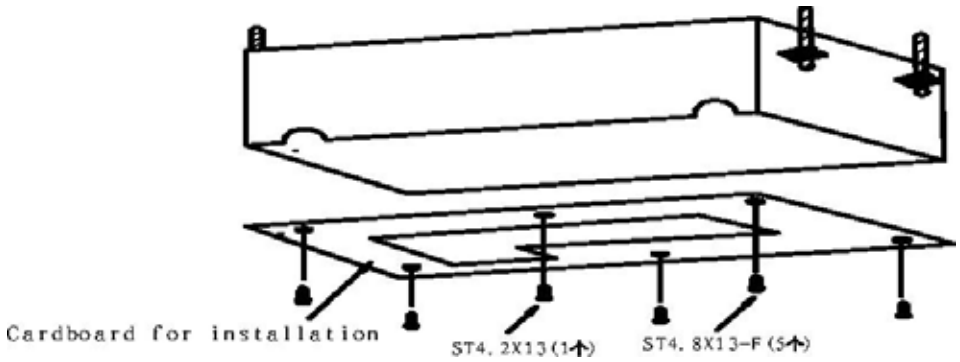


Fig 3

Hoisting the main body of the unit

1. Hoisting the main body

Attach the hoisting stand base to hoisting screw. In order to firm the hoisting stand base, use nuts with washers on either end of it.(refer to Fig. 1)

2. Please refer to the dimension of ceiling opening on the cardboard for installation

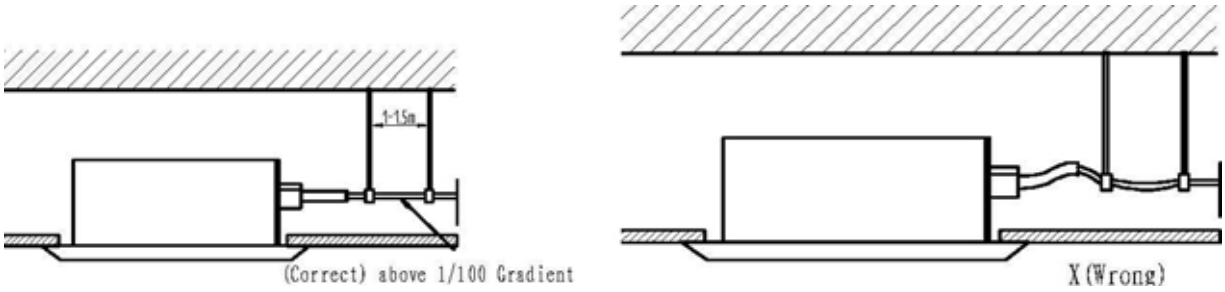
- There is a mark for ceiling opening center on the cardboard.
- There is also a mark for main body center on the cardboard.
- Use screws to fix the installation cardboard on the unit. (refer to Fig.3)

3. Adjust the unit to right installation place.
4. Check if the unit is horizontal.
   Inner drainage pump and bobber switch are installed in indoor unit. Check if every side of the unit is horizontal by water lever. (If the unit slants to opposite direction towards which coagulate water flows, it will bring malfunction to the bobber switch and cause water drops. (refer to Fig.2)
5. Unscrew the screws on the cardboard, which can be used for installing front panel.

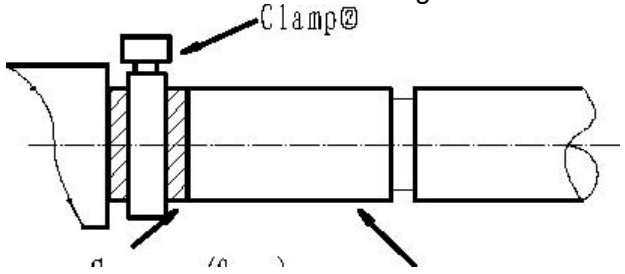
- **Drainage pipe**

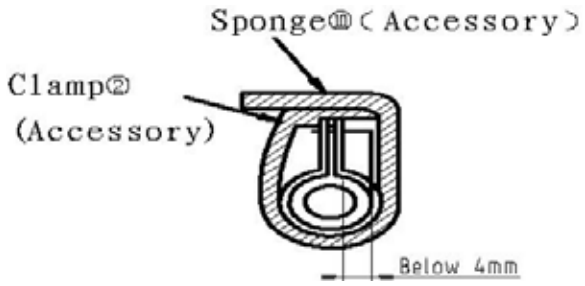
1. Installing drainage pipe
   The diameter of drainage pipe should be larger than that of connecting pipe. (Polythene pipe: dimension: outer diameter 25mm wall thickness≥1.5mm)

- Drainage pipe should be as short as possible and drooping gradient at least 1/100 to avoid the formation of air bubble.
- If drainage hose cannot have enough drooping gradient, drainage raising pipe should be installed.
- In order not to bend the drainage hose, the distance between hoisting stands should be 1 to 1.5m..



- With accessory drainage hose and clamp, insert the drainage hose into the drainage faucet, and then tighten the clamp.
- Entwine the clamp of drainage hose with the big sponge to isolate heat.
- Isolate heat for the outdoor drainage host.

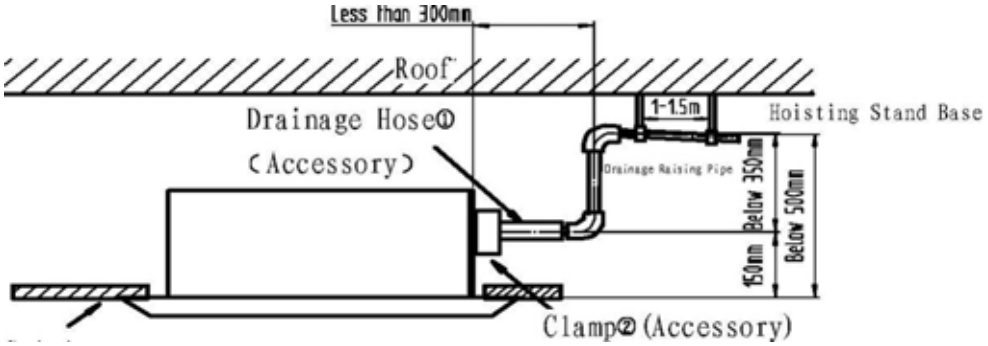




Sponge (Gray) Drainage Hose

Notice for drainage raising pipe

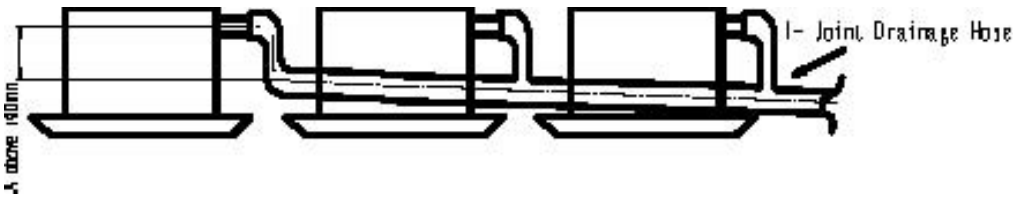
- The installation height should be less than 280mm.
- A right angle should be formed by the drainage raising pipe and unit, which should not be more than 300mm far from the unit.



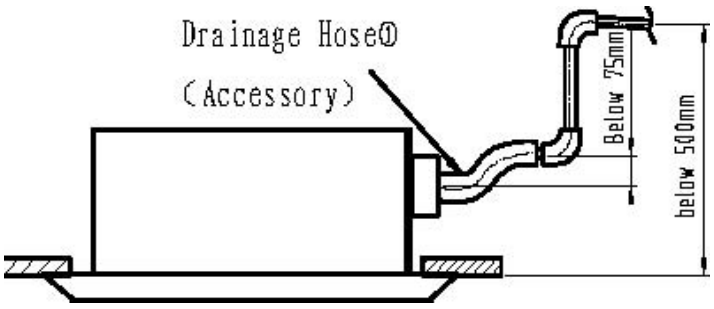
Ceiling

Note：

- The gradient of the accessory drainage hose should be within 75mm so that the drainage faucet need not endure extra outside force.
- If several drainage hoses join together, please install them according to the following process.

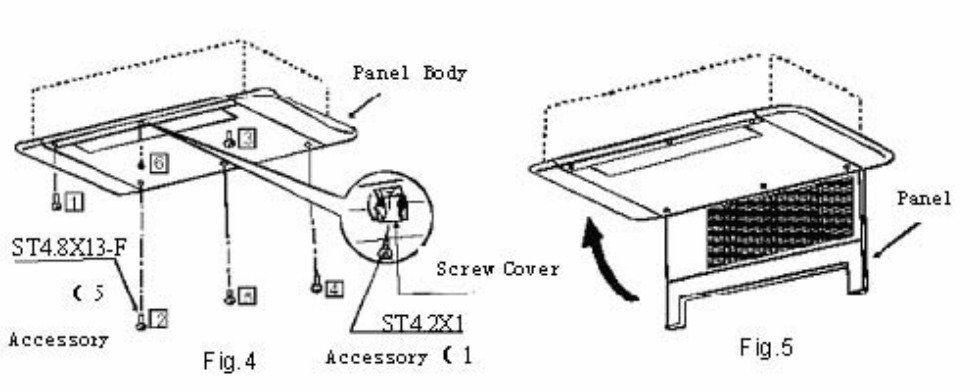


The specs of the selected joint hose should fit the running capacity of the units.



● Front panel body and installation

1.Take off the front panel from the panel body.

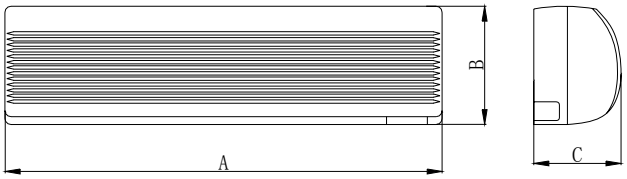


2. AS shown in Fig.4, install the panel body, and then tighten the screws according to the sequences in the figures.

3 .As shown in Fig.5, install the panel on the panel ,and then turn it for fastening

6.4 Wall mounted type

6.4.1 Dimensions Data



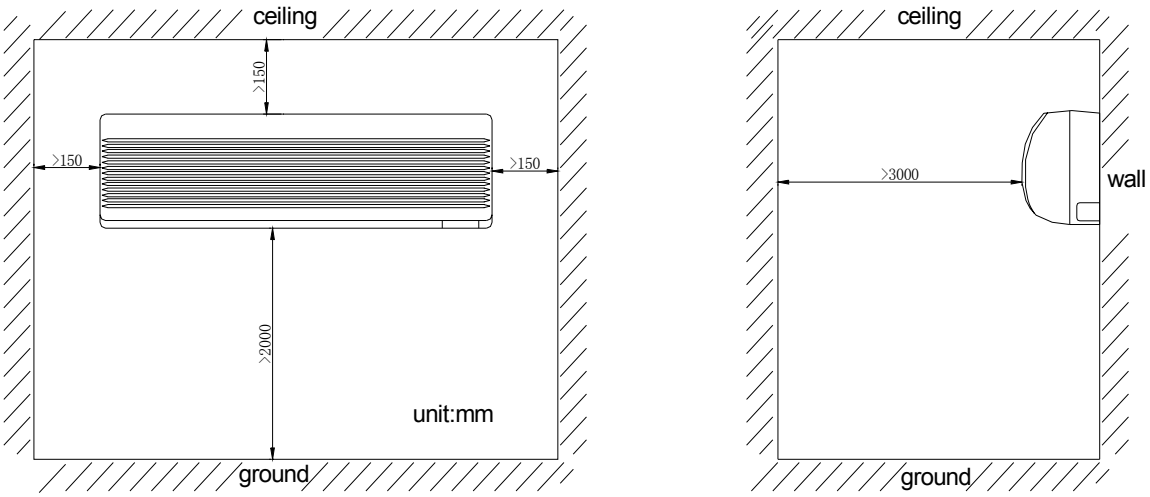
Remark :The appearance will be different according to the models.

Model	GMV(L)-R22G/NaB-K	GMV(L)-R28G/NaB-K	GMV(L)-R36G/NaB-K	GMV(L)-R45G/NaB-K
A(mm)	770	770	830	830
B(mm)	250	250	285	285
C(mm)	190	190	189	189

Model	GMV(L)-R50G/NaB-K	GMV(L)-R56G/NaB-K	GMV(L)-R71G/Na-K	GMV(L)-R80G/Na-K
A(mm)	1020	1020	1178	1178
B(mm)	310	310	326	326
C(mm)	228	228	227	227

6.4.2Installation space requirements

Schematic diagram of installation spaces



Important Notice:

① The unit must be installed by the professional personnel according to this install instruction to ensure the well use.

② Please contact the local authorized repair department of Gree before installation. Any malfunction caused by the unit that is installed by unauthorized center would not be treated on time by the inconvenience of the business contact.

③ It should be guided under the professional personnel when the air conditioner unit is moved to other place.

6.4.3 Installation demonstration

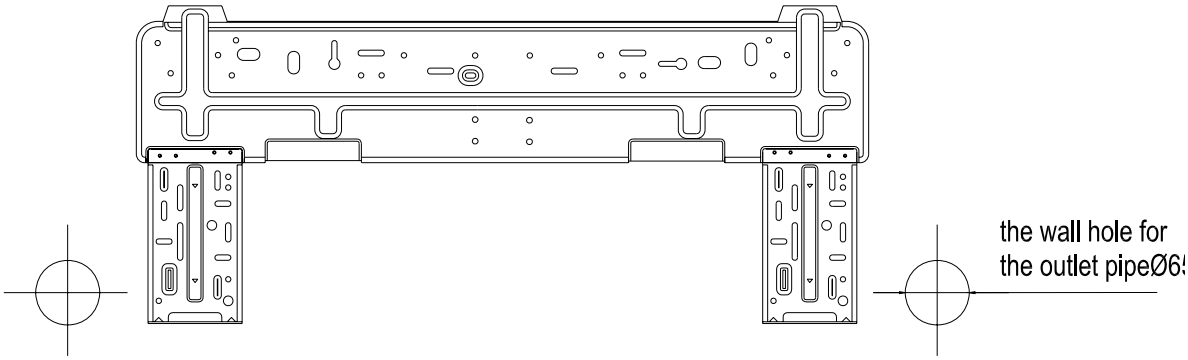


Fig.1

1. Find the horizontal position by seton method; since the drainage hose is on the left side, adjust the rear panel to make its left side a little bit lower.

2. Fix the rear panel on the wall by bolt.

3. After installing the rear panel, pull it by hand to check if it is firm enough. The hang panel should support the weight of an adult (60KG), and the weight shared by every bolt for steady should be fairly even.

4. The diameter showed on the fig.1 is 65mm.

Installation the Wall Mounted Type indoor unit

☆ Make the piping hole (Φ65mm) in the wall at a slight downward slant to the outdoor side. The center of the hole should be determined refer to Fig.1

☆ Insert the piping-hole sleeve into the hole to prevent the connected piping and wiring from being damaged when passing through the hole.

● Install the drainage hose

☆ For well draining, the drainage hose should be placed at a downward slant.

☆ Do not wrench or bend the drainage hose or flood its end bywater. (Fig.2)

☆ Wrap heat resistant material when connect the longer drainage hose though indoor.

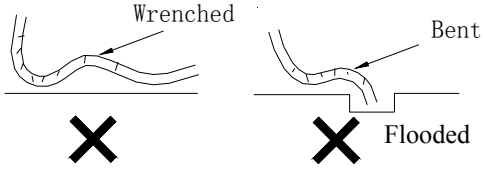


Fig .2

● Install the connection pipes

Connect the connection pipe with the two relative leading pipes, and tie the nut on tie –in of the connect pipe tightly.

Note !

☆ Be careful in bending the connection pipes, or you will damage the pipes.

☆ If the tightening torque is too great in tightening the flare nut, leakage will happen.

6.5 Floor Ceiling Type

6.5.1 Selection of installation site

Selection of Installation Location for Air Conditioner Unit

The installation of air conditioner unit must be in accordance with national and local safety codes. Installation quality will directly affect the normal use of air conditioner unit. The user is prohibited from installation by himself. Please contact your dealer after buying this machine. Professional installation workers will provide installation and test services according to installation manual. Do not connect to power until all installation work is completed.

● Selection of Installation Location

☆ Such a place where cool air can be distributed throughout the room.

☆ Such a place where is condensation water is easily drained out.

☆ Such a place that can handle the weight of indoor unit.

☆ Such a place, which has easy access for maintenance.

☆ Such a place where easy connection with the outdoor unit is permitted.

☆ Such a place which is 1m or more away from other electric appliances such as television, audio device, etc.

☆ Avoid a location where there is heat source, high humidity or inflammable gas.

☆ Do not use the unit in the immediate surroundings of a laundry, a bath, a shower or a swimming pool.

☆ Be sure that the installation conforms to the installation dimension diagram.

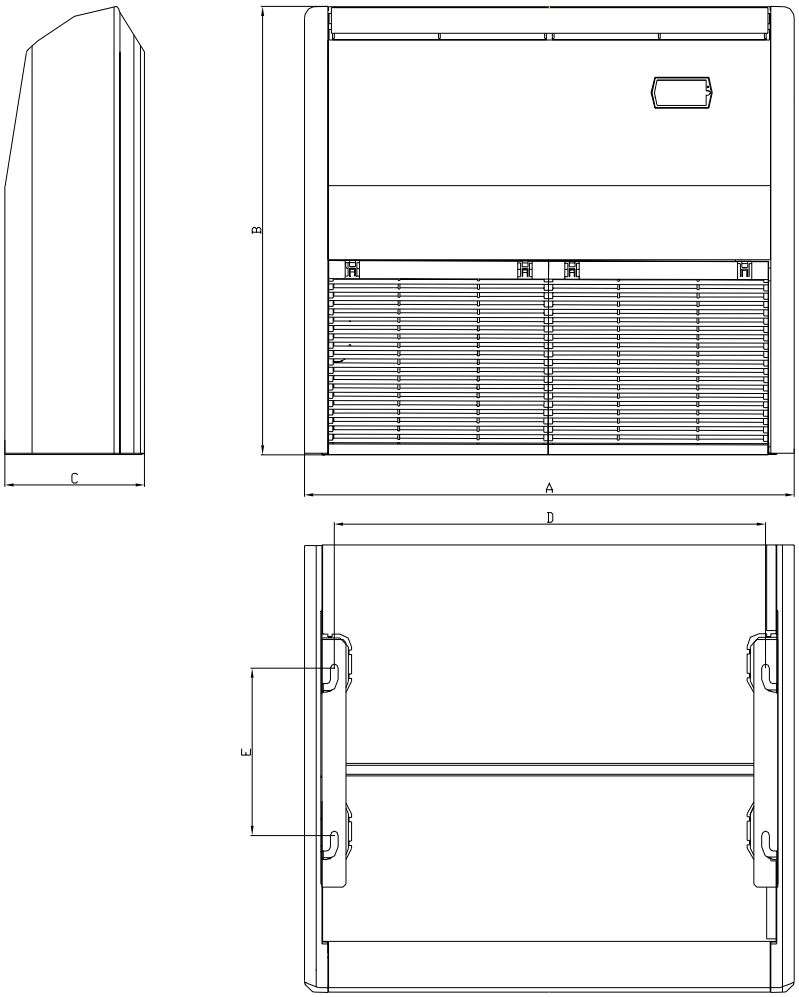
● Caution for installation where air conditioner trouble is likely to occur

☆ Where there is too much oil.

☆ Where it is acid base area.

☆ Where there is irregular electrical supply.

6.5.2 Dimensions Data



Model	Installation dimensions		Outline dimensions		
	E	D	A	B	C
GMVL-R28Zd/Na-K GMV-R28Zd/Na-K	260	745	840	695	238
GMVL-R36Zd/Na-K GMV-R36Zd/Na-K	260	745	840	695	238
GM(L-R50Zd/Na-K GMV-R50Zd/Na-K	260	745	840	695	238
GMVL-R71Zd/Na-K GMV-R71Zd/Na-K	260	1220	1300	600	188
GMVL-R90Zd/Na-K GMV-R90Zd/Na-K	260	1500	1590	695	238
GMVL-R112Zd/Na-K GMV-R112Zd/Na-K	260	1500	1590	695	238
GMVL-R125Zd/Na-K GMV-R125Zd/Na-K	260	1500	1590	695	238

6.5.3 Installation space requirements

☆ The space around the unit is adequate for ventilation (Refer to Fig.1)

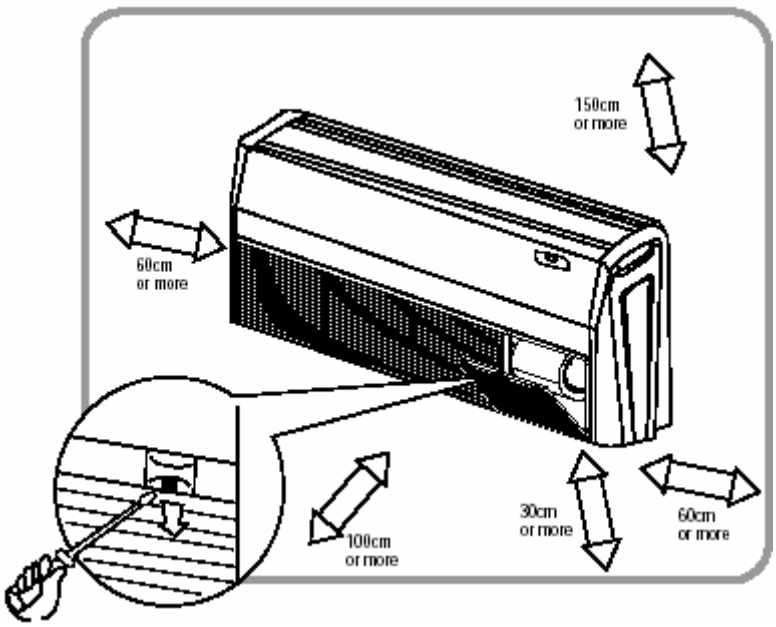


Fig.1

6.5.4 Installation demonstration

● **There are 2 styles of installation**

☆ **Ceiling type**

☆ **Floor type**

Each type is similar to the other as follows:

1. Determine the mounting position on ceiling or wall by using paper pattern to indicate indoor frame. Mark the pattern and pull out the paper pattern. (Refer to Fig.2)
2. Remove the return grill, the side panel and the hanger bracket from the indoor unit as per procedure bellow.

☆ Press the fixing knob of the return air inlet grills, the grilles will be opened wider and then pull them out from the indoor.

☆ Remove the side panel fixing screw and pull to the front direction (arrow direction) to remove. Side panel fixing screw (Refer to Fig.3).

☆ Loosen two hanger bracket setting bolts (M8) on eath side for less than 10mm. Remove two hanger bracket fixing bolts (M6) on the rear side. Detach the hanger bracker by pulling it backward (Refer to Fig.5).

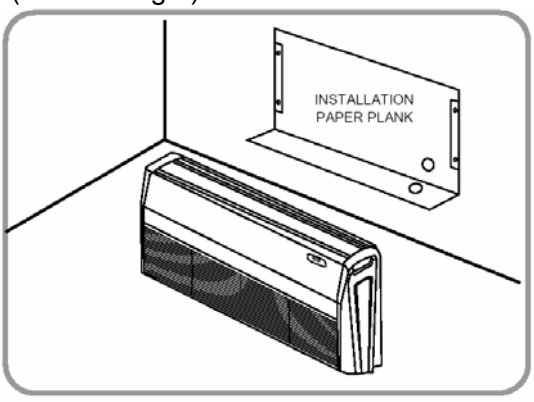


Fig.2

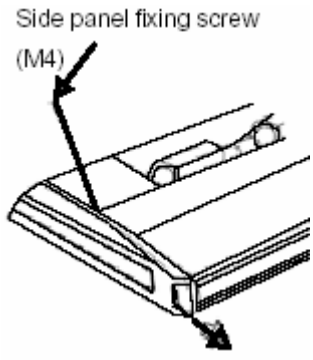


Fig.3

3. Set the suspension bolt. (Use W3/8 or M10 size suspension bolts)

☆ Adjust the distance from the unit to the ceiling slab beforehand (Refer to Fig.4)

4. Fix the hanger bracket to the suspension bolt.

Warning !

☆ Make sure that extended suspension bolt from the ceiling stays inside the arrowed position. Readjust the hanger bracket when it is outside the arrowed position. (Refer to Fig.6)

☆ Suspension bolt stays inside the cap of indoor unit. Never remove the cap.

5. Lift the unit and slide forward unit the dent. (Refer to Fig.7)

6. Screw tightly both hanger bracket-setting bolts (M8). (Refer to Fig.5)

7. Screw tightly both hanger bracket-fixing bolts (M6) to prevent the movement of the indoor unit. (Refer to Fig.5)

8. Adjust the height so that rear side of the drainpipe slightly inclines to improve drainage.

Caution !

☆ Adjust the height by turning the nut with a spanner.
Insert the spanner from the hanger bracket opening. (Refer to Fig.8)

In case of hanging

It is possible to install using inward facing hanger brackets by not removing the brackets from the indoor unit. (Refer to Fig.9)

Be sure to use only the specified accessories and parts for installation work.

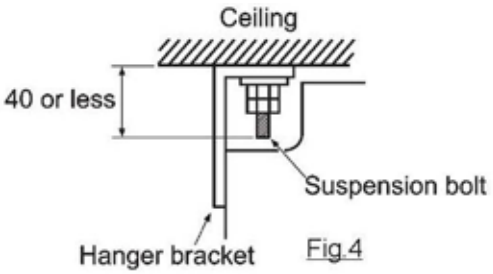


Fig.4

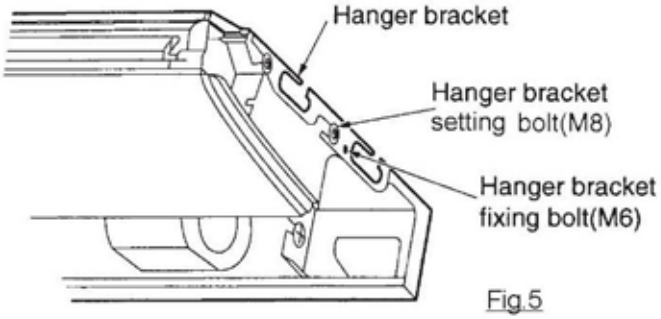


Fig.5

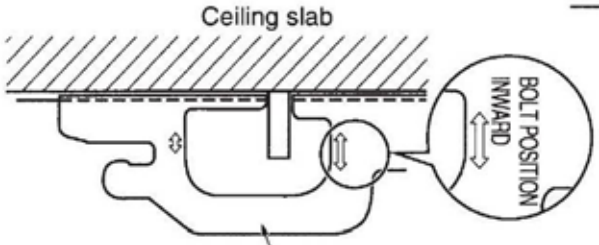


Fig.6

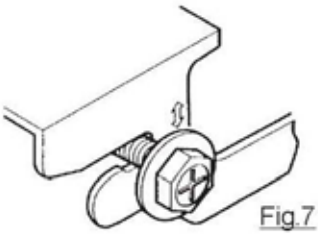


Fig.7

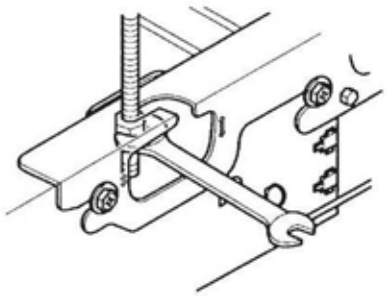


Fig.8

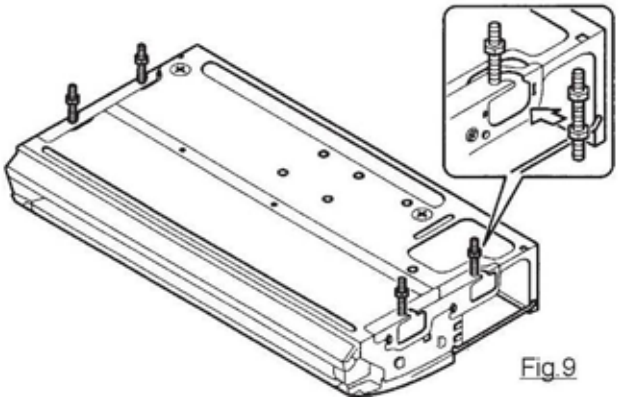


Fig.9

7 INSTALLATION OF HYDRO-BOX

7.1 Dimension of Hydro-box

Applicable to RQD8GA-K、RQD5GA-K、RQ8GB-K、RQ5GB-K

Dimension（mm）（W×D×H）				650×300×250
Power Specification				220V 50Hz~
Dimension of Pipe	Refrigerants	Liquid pipe	mm	Φ12.7
		Gas Pipe	mm	Φ15.9
	Water	Feed pipe	in	3/4"
		Discharge pipe	in	3/4"

Applicable to RQD8GB-K、RQD5GB-K

Dimension（mm）（W×D×H）				650×435×258
Power Specification				220V 50Hz~
Dimension of Pipe	Refrigerants	Liquid pipe	mm	Φ12.7
		Gas Pipe	mm	Φ15.9
	Water	Feed pipe	in	3/4"
		Discharge pipe	in	3/4"

Applicable to RQ20LA-K.RQ30LA-K

Dimension（mm）（W×D×H）				1050×410×905
Power Specification				220V 50Hz~
Dimension of Pipe	Refrigerants	Liquid pipe	mm	Φ19.05
		Gas Pipe	mm	Φ15.9
	Water	Feed pipe	in	3/4"
		Discharge pipe	in	3/4"

Applicable to RQD20LA-M.RQD30LA-M.

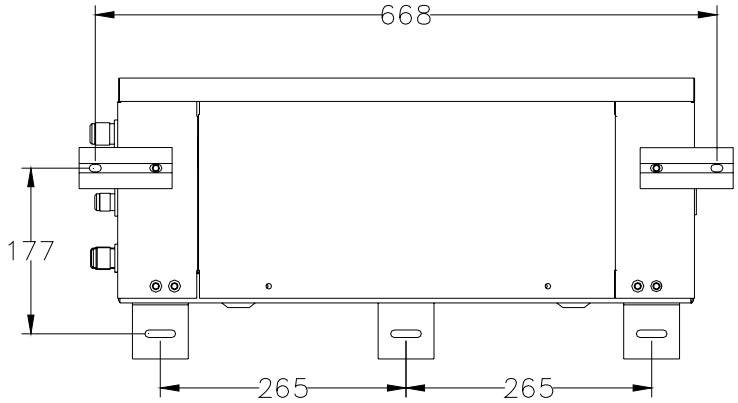
Dimension（mm）（W×D×H）				1050×410×905
Power Specification				380V 50Hz~
Dimension of Pipe	Refrigerants	Liquid pipe	mm	Φ19.05
		Gas Pipe	mm	Φ15.9
	Water	Feed pipe	in	3/4"
		Discharge pipe	in	3/4"

7.2 Installation Method and Dimension of Hydro-box

7.2.1 Applicable to RQD8GA-K.RQD5GA-K. RQD8GB-K.RQD5GB-K. RQ8GB-K.RQ5GB-K.

Floor standing, wall mounting and ceiling mounting are permissible. For wall mounting, take care that the motor of water pump shall not be upright.
Correct Wall-mounted Installation:

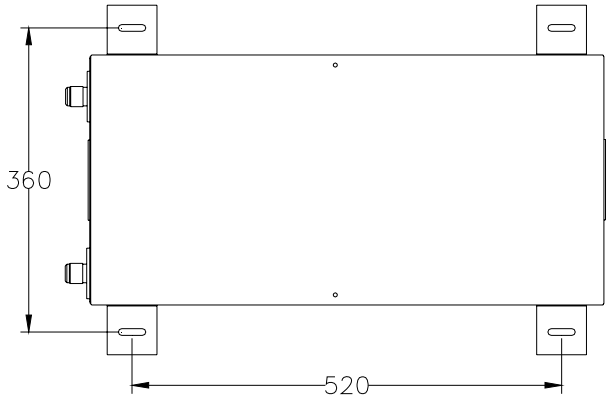
Wall Mounting Hole:



Ceiling Mounting:

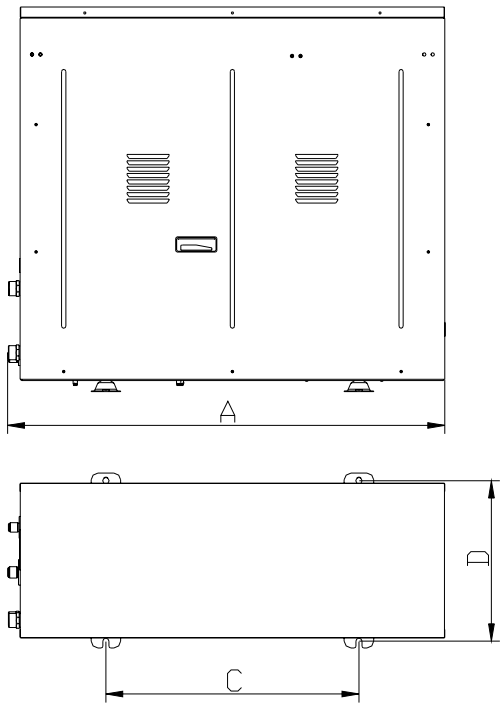
Floor Standing:

Floor Standing and Ceiling Mounting Hole:



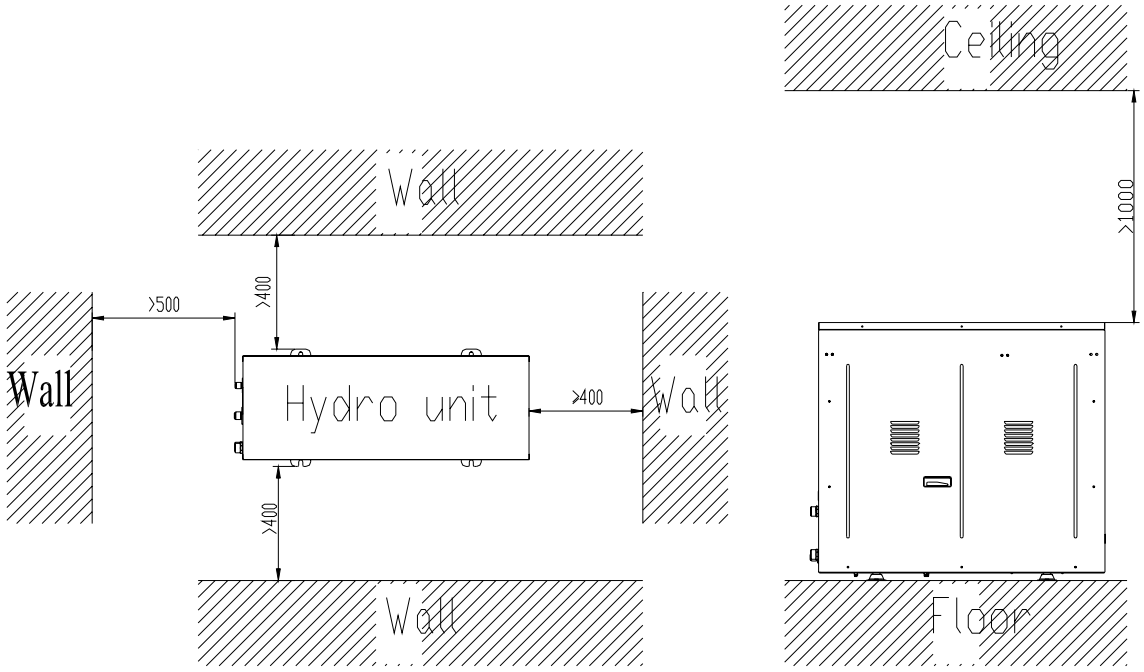
7.2.2 Applicable to RQ20LA-K.RQ30LA-K.RQD20LA-M.RQD30LA-M

Floor Standing:



units(mm)

Model	A	B	C	D	H
RQ20LA-K	1050	470	600	430	910
RQD20LA-M	1050	470	600	430	910
RQ30LA-K	1050	470	600	430	910
RQD30LA-M	1050	470	600	430	910


Wall
≥400
≥500
Wall
Hydro unit
≥400
Wall
≥400
Wall
Ceiling
≥1000
Floor

7.3 Connecting Pipe between Outdoor Unit and Hydro-box

Connect outdoor unit with hydro-box by refrigerants piping

Model	Refrigerants Pipe	Diameter (mm)	Length≤d（m）	Connection way
RQD5GA-K RQD8GA-K RQD8GB-K RQD5GB-K RQ8GB-K RQ5GB-K	Gas pipe	15.9	10	Negative Delta
	Liquid pipe	12.7	10	Negative Delta
RQ20LA-K RQ30LA-K	Gas pipe	19.05	10	Negative Delta
RQD20LA-M RQD30LA-M	Liquid pipe	15.9	10	Negative Delta

7.4 Connection Requirements of Hydro-box and Water Tank

Connect hydro-box with water tank by water pipe which can be galvanized pipe or seamless steel pipe,like PVC pipe, PPR pipe, etc.

Circulating Pipe	Joint Size（in）	Vertical Height≤d（m）	Connection Method
Inlet Pipe	3/4"	3	Threaded Connection
Outlet Pipe	3/4"	3	Threaded Connection

☆ If the vertical height is more than 5m, please contact us.

☆ Execute insulation work to circulating tube and the thickness of heat insulating material shall be not less than 10mm.

☆ Each joint of circulating tube shall be completely sealed.

8 INSTALLATION OF WATER TANK

8.1 Cautions of Installation

If it is installed in the places below, the malfunction may be caused (if it can't be avoided, please consult us):

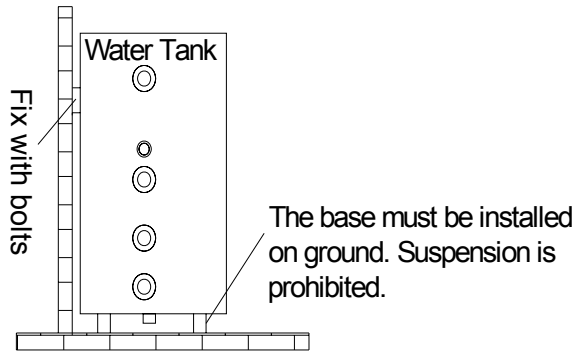
1) The place where there is any kinds of mineral oil.
2) The place where the air is salty.
3) The place where there is corrosive gas
4) The place where the supply voltage is unstable.
5) The car or cabin.
6) The place where there is oil gas and oil slick,such as kitchen.
7) The place where there is strong ether wave.
8) The place where there is the flammable gas and materials.
9) The place where there is acid gas or alkaline gas
10) Other special environments

8.2 Selection of Installation Position of Water Tank

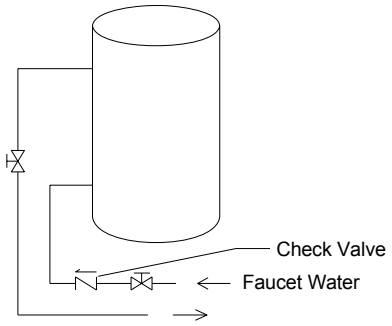
1) The water tank shall be installed in the place where the temp is over 0 ℃
2) The distance between heat pump unit and water tank shall be not exceed 5m. The drop height between water outlet of outdoor unit and water inlet of water tank shall be less than 3m.
3) The installation site shall withstand the weight of the unit.
4) The drainage vent of water tank shall be close to drain ditch or sinker.

8.3 Installation Cautions

1. The thermal insulation water tank shall be installed within a horizontal distance of 5m and a vertical fall of 3m to the water heater. It may be installed outdoors, e.g. balcony, roof or ground, according to the position of water heater. It may also be installed indoor.
2. The vertical thermal insulation water tank must be placed upright, with the bottom on ground. The installing position must be firm and solid. To avoid shaking, the water tank must be fixed onto the wall with bolts. See below for details. The weight bearing capacity of the installing position must be considered when installing the water tank.



3. For replenishing to water tank, supply of hot water and drainage of water tank, the faucet water pipe, hot water connector and ground drain shall be available close to the thermal insulation water tank.
4. Connection of inlet / outlet pipe: The included safety check valve (Take care that the "→" direction shall point toward the thermal insulation tank) shall be connected to the inlet of water tank by using PPR pipe and be sealed with adhesive tape, as shown below. Another end of the check valve shall be connected to the faucet water. The hot water pipe shall be connected to the outlet of



water tank by using PPR pipe.

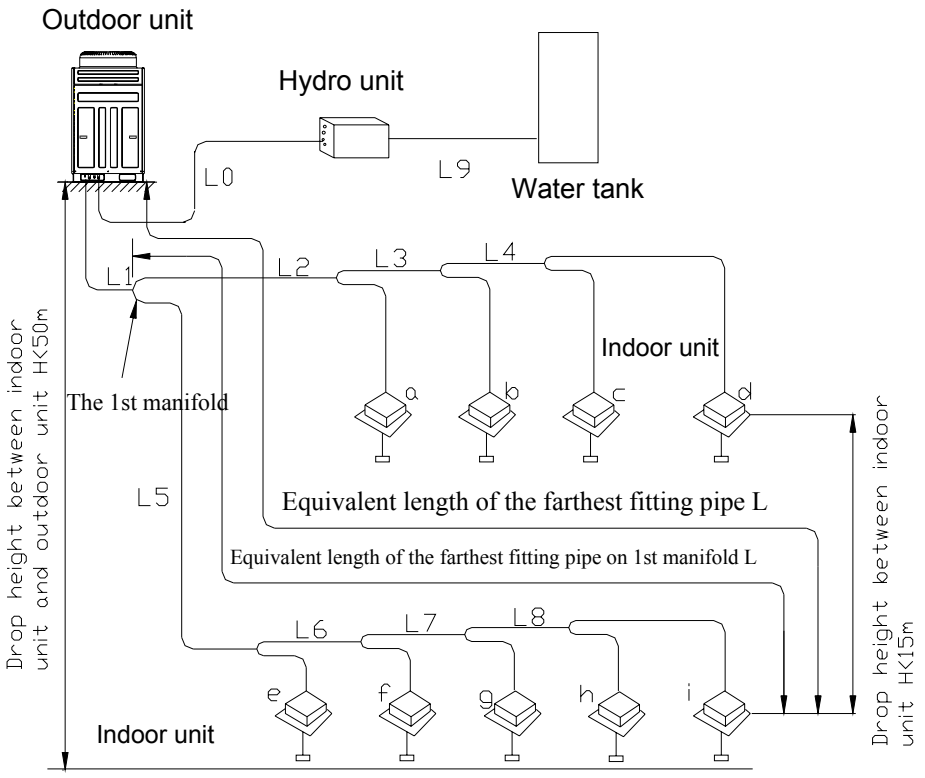
Note: To ensure safety during use of water, the inlet and outlet of water tank must be connected with a specific length of PPR pipe. The length "L" is calculated as below: $L \geq 70 \times R^2$, in which "L" refers to pipe length (unit: mm) and "R" refers to the inner radius of the pipe (unit: cm). Thermal insulation shall be done and metal pipe shall not be used. For the first time of use, make sure that the water tank is filled with water before connecting to the power. The water tank shall not run without water.

9 INSTALLATION REQUIREMENTS OF REFRIGERANT PIPING

9.1 Specification

R410a refrigerant system			
External Diameter(mm/inch)	Thickness(mm)	External Diameter(mm/inch)	Thickness(mm)
φ6.35	≥0.8	φ22.2	≥1.5
φ9.52	≥0.8	φ25.4	≥1.5
φ12.7	≥1	φ28.6	≥1.5
φ15.9	≥1	φ34.9	≥1.5
φ19.05	≥1		

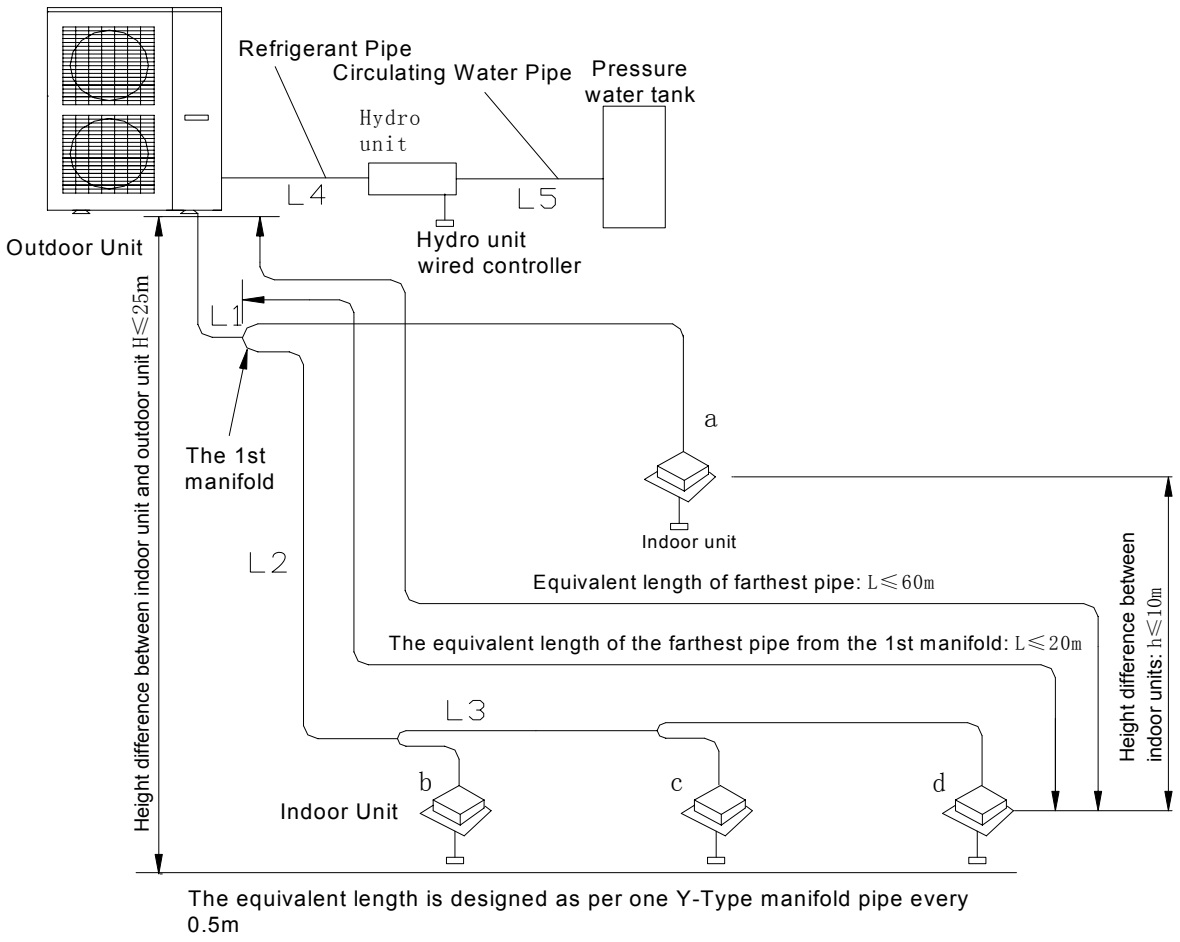
9.2 Allowable Length and Height Differences of the Refrigerant Piping between the Indoor and Outdoor Units



Equivalent length is based on one Y-type manifold pipe per 0.5m

Units with capacity between 20kW and 60 kW

		Allowable	Fitting Pipe
Total length (actual length) of fitting pipe		300m	$L_{0+}L_1+L_2+L_3+L_4+L_5+L_6+a+b+\ldots+i+j$
Length of farthest fitting pipe（m）	Actual length	100m	$L_1+L_3+L_4+L_5+L_6+j$
	Equivalent length	125m	
length from the first branch to the furthest		40m	$L_3+L_4+L_5+L_6+ j$
Height difference between outdoor unit and indoor unit	Outdoor unit at	50m	——
	Outdoor unit at	40m	——
Height difference between indoor units（m）		15m	——
length from outdoor unit to Hydro Unit		10m	L0
length from Hydro Unit to water tank		10m	L9



Units with capacity between 10kW and 19 kW

		Allowable Value	Pipe
		100, 120, 140, 160	
Total Length (Actual Length) of Pipes		150m	$L_1+L_2+L_3+2L_4+a+b+c+d$
Length of farthest pipe (m)	Actual Length	50m	$L_1+L_2+L_3+d$
	Equivalent Length	60m	
Length of pipe from the 1st Branching to the farthest indoor unit		20m	L_2+L_3+d
Height difference between indoor unit and outdoor unit	Outdoor unit on upper	25m	——
	Outdoor unit at lower	20m	——
Height difference between indoor unit and outdoor unit		10m	——
Height difference between hydro indoor unit and outdoor unit		5m	——
Length of the farthest pipe between hydro indoor unit and outdoor unit		10m	L_4
Length of the water pipe between hydro indoor unit and water tank		10 m	L_5

9.3 Selection of Y-Type Branch Pipe

R410a refrigerant system	Total Capacity of the Downstream Indoor Unit (X)	Model
Y-Type Branch Pipe	200<C≤300	FQ01A/A
	X≤200	FQ01B/A

9.4 Selection of Diameter

① The diameter of the piping (the main pipe) from the Outdoor Unit to the first branch joint

R410a refrigerant system		
Outdoor capacity code C	Gas pipe (mm/inch)	Liquid pipe(mm/inch)
50<C≤70	Φ15.9	Φ9.52
70<C≤180	Φ19.05	Φ9.52
180<C≤320	Φ22.2	Φ9.52

Note: If the equivalent length of total t pipe exceeds 90m, the fitting pipe on gas side and liquid side shall be increased of one dimension.

② The diameter of the piping between branch joints (the branch pipe)

R410a refrigerant system		
Outdoor capacity code C	Gas pipe (mm/inch)	Liquid pipe(mm/inch)
C≤50	Φ12.7	Φ6.35
50<C≤70	Φ15.9	Φ9.52
70<C≤180	Φ19.05	Φ9.52
180<C≤320	Φ22.2	Φ9.52

③ The diameter of the piping from the branch joint (branch pipe) to the indoor unit

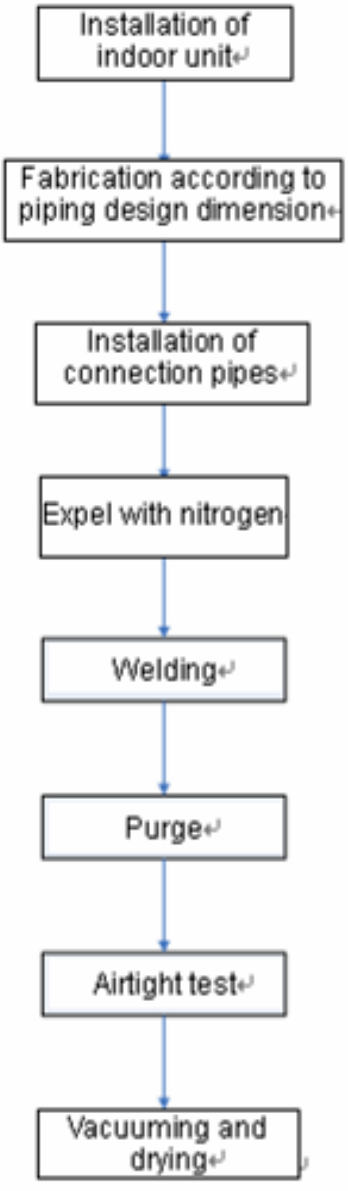
R410a refrigerant system		
Outdoor capacity code C	Gas pipe (mm/inch)	Liquid pipe(mm/inch)
22, 28 Type	φ9.52	φ6.35
36, 45, 50 Type	φ12.7	φ6.35
56, 63, 71, 80, 90, 10, 112 Type	φ15.9	φ9.52

Note: If the distance from the first Branching to one indoor unit is over 30m, the gas pipe and the liquid pipe from the 1st Branching to this indoor unit shall be increased by one level.

When the capacity of indoor unit is less than 5KW, if the distance from the nearest manifold to the indoor unit exceeds 10m, the fitting pipe on liquid side of the pipe shall be increased of one dimension

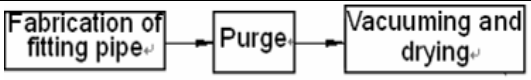
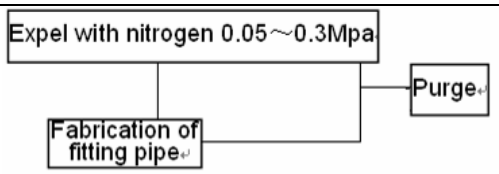
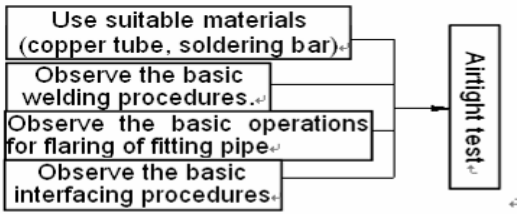
10 INSTALLATION OF REFRIGERANT PIPING

10.1 Flow Chart of Installation



10.2 Three Principles of Refrigerant Piping Installation

Keep to the three principles of refrigerant piping:

	Key Factors	Measures to Avoid Failure
Dry	Invasion of outside water Example: Rainwater, engineering water Invasion of indoor condensate	
Clean	Formation of oxides inside the pipe during welding Invasion of dust and foreign articles from outside	
Airtight	Incomplete welding Leakage from flared port Leakage from edge	

10.3 Installation of Metal Embedded Pipe

◆ Work Order

Plot the line on ground if possible and use laser to project it onto the roof. This is quick and correct.

◆ Advance Installation of Metal Embedded Parts

Please select according to local codes

◆ Subsequent Installation of Expansion Bolts

In case that the metal embedded parts cannot be used due to design change, the expansion bolts may be used.

◆ Subsequent Installation of Expansion Bolts

- The foot pedal shall be supported on three points if exceeding 2m.

  The foot pedal must be fixed securely to the ladder.

- Please do not work on the top of ladder.

10.4 Installation of Carriage of Refrigerant Piping

1）Fixing of horizontal pipe

The refrigerant pipe will extend and shrink with each start or stop of the air conditioner unit (5~10 times / hour). Under a temperature difference of 80°C, this extension may reach 13.84mm for every 10m. To prevent failure, the pipes must be reinforced as follows.

Spacing between supports

Outer diameter of pipe (mm)	6.35-8.52	Over 12.7
Spacing between supports (m)	Below 1.2	Below 1.2

Note: If the gas pipe and liquid pipe are suspended together, the size of liquid pipe shall prevail.

⚠ CAUTION:

Never let the pipe in direct contact with the fixing metal parts. Thermal insulation shall be provided around the fixing metal parts; otherwise, condensing will occur.

2）Fixing of vertical pipe

The vertical pipe may be fixed by using the commodity tools in market or self-made tools. As above, the fixing point shall also be thermally insulated.

3）Fixing of other points

Measures shall be taken to prevent the extension or shrinkage of pipes from causing excessive loads to some positions, machine joint and waterproof points. Generally, such positions refer to the branch pipe joint, pipe ends, four sides of indoor unit and wall-cross hole.

10.5 Management and Machining of Refrigerant Piping

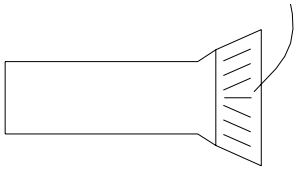
1）Storage

- After receiving the refrigerant pipe and other components, do not move them to the storage until confirming that they have no deformation, bend, crack or damage.
- The pipe end must be sealed to prevent the invasion of moisture or wastes.
- The copper pipe with coating may become deformed under the compression of the coating material, so that the coils shall be placed upright.
- To avoid the invasion of moisture or wastes, a support higher than the ground must be built by using woods.
- Care of pipe end during construction

The pipe ends must be well cared during construction. According to the working position, work progress and surrounding environment, the most effective way is to seal the end and wrap with adhesive tape.

i. Sealing method

Clamp the pipe end and weld on it.



Clamp the pipe end to flat and weld on the clearance. Then, charge nitrogen 2～5kgf/cm^2. This will be more effective.

ii. Method for wrapping with adhesive tape

Seal the pipe end with ethylene tape.

2）Coil unwinding

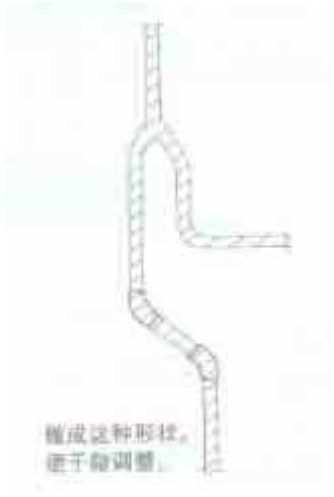
⚠ CAUTION:

- When unwinding the coil, take care not to drag it on the ground. The coil shall be slowly unwound on ground without any twisting. In case of excessive compression by any hard object during unwinding, the thermal insulation materials may be damaged and cannot be recovered, which will deteriorate the performance of thermal insulation. Do not unwind carelessly. Otherwise, the fitting pipe might be flattened.
- The copper pipe shall be rounded if the pipe end is deformed.

(The higher the size, the higher the possible deformation)

3）Measuring of pipe

- (To reduce the resistance and length of copper pipe), the dimension of main refrigerant pipe shall be so taken that the bends shall be minimized, the radius of bend section shall be increased and the upstream and downstream section shall be reduced. Use the method that can reduce the actual length and equivalent length of the copper pipe.
- Sometimes the connection pipe of indoor unit must be adjusted due to the relation with accessories, drainage pipe and connection surface. Therefore, a fairly marginal dimension shall be taken.



4）Cut·Chamfer

◆ Cut

a) Cut vertically to axis direction by using special pipe cutter that is suitable to the dimension of copper pipe (big, medium, small).

b) During operation, press and rotate the pipe cutter slowly and cut off the copper pipe without causing any deformation.

Never use saw or grinding wheel, because the copper scraps may be left inside the pipe. Even use of such tools once will make all works scrapped. It is useless no matter how good the quality of other works. It is best that all operators shall have one pipe cutter and at least one pipe cutter of big dimension shall be provided on site.

⚠ CAUTION:

To prevent the invasion of water or waste, avoid placing the copper pipe directly on ground.

◆ Chamfer

Burrs may occur on the cutting face of copper pipe and must be removed. Meanwhile, purge the foreign articles out of the pipe and refinish the pipe end.]

● Use scraper or other tools to remove the burrs on inner side.

(To prevent copper scraps from falling into the pipe, please keep the pipe end downward during operation).

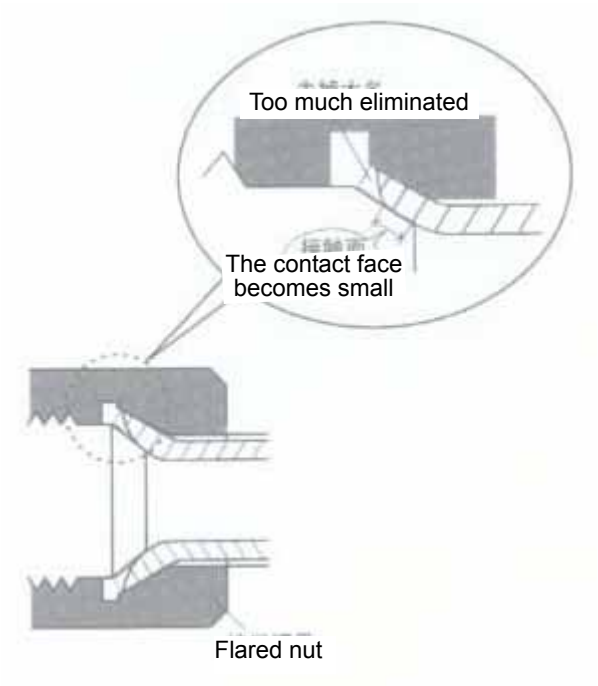
● If the pipe end is obviously deformed, please cut and throw it off, and then refinish the pipe end.

● Eliminate the copper scraps thoroughly, and use cotton yarn to wipe the pipe clean.

※ The flared joint must be kept smooth.

※ When removing the burrs with scraper, do not remove too much, especially for the fitting pipe of small diameter; otherwise the contact surface of the flared joint will be reduced. Do not cause any scores, and avoid cracking after the flared joint is formed.

※ Adverse impact if the burrs are removed too much with scraper:



5）Pipe bending

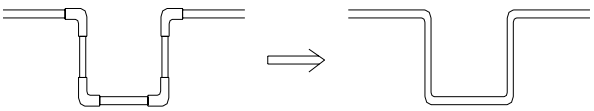
◆ Work Methods:

a) Bend by hand ……..Suitable to fine copper pipe (φ6.35mm-φ12.7mm).
b) Machining with spring pipe bender …….. Bend by inserting the spring into copper pipe or sheathing onto the copper pipe (φ6.35mm-φ22.2mm).
c) Machining with hand-operated pipe bender……Use the pipe bender of suitable dimension (φ6.35mm-φ22.2mm).
d) Machining with electric pipe bender (hydraulic)……Suitable for mass machining of fine and coarse fitting pipes (φ6.35mm-φ69.9mm).

Advantages

Decrease the weld joint, thus reduce the possibility of leakage and oxidization.

For example:



It can decrease the weld by 8 spots. Please act now to improve the quality.

※ No joint is required, which will save the material costs. Reduced waste of fitting pipe materials.

※ Reduced resistance in the fitting pipe. The bending radius higher than the pipe joint.

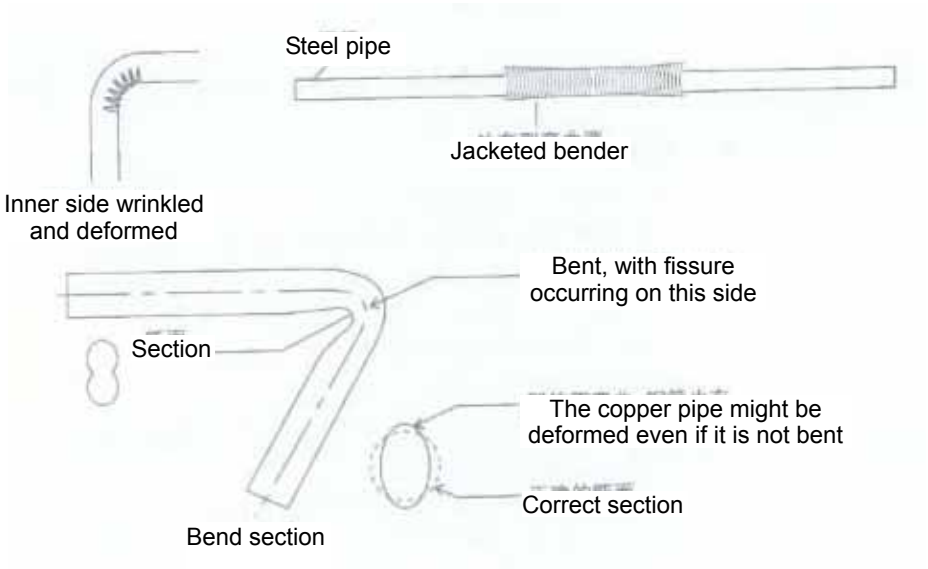
◆CAUTIONS

※ During bending, there shall be no wrinkling or deformation on the inner side of the copper pipe.

※Spring pipe bend

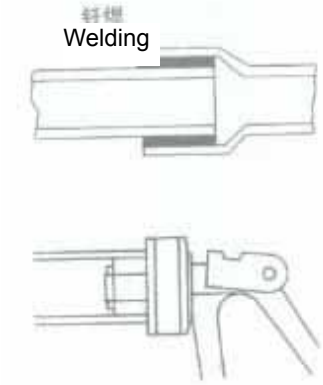
※ The bender inserted into the copper pipe must be cleaned.

※ Do not bend over 90º. (Otherwise, wrinkling may be formed on the inner side of copper pipe and in the future, the copper pipe will be broken from this position.)


Steel pipe
Jacketed bender
Inner side wrinkled and deformed
Bent, with fissure occurring on this side
Section
The copper pipe might be deformed even if it is not bent
Correct section
Bend section

6）Flaring

The flaring refers to expansion of pipe opening. The copper pipe is inserted here to replace the casing pipe. In this way, it is only needed to weld on one position where the pipe is expanded.



10.6 Installation of Refrigerant Piping

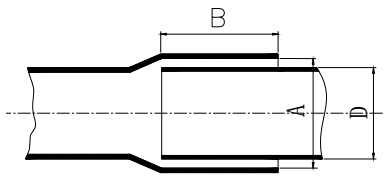
1）Precautions on piping works

- At the site of transport, storage and construction, the two ends of copper pipes shall be sealed with plastic sealing caps. Before welding, copper pipes must be cleaned (washing the inner side of pipe with alcohol) to ensure no dust and no water in pipeline.
- Nitrogen-filled welding shall be used for the welding of copper pipes. Nitrogen pressure shall be 0.05～0.3MPa. Nitrogen flow can be sensed by hand.
- When multiple multi-connected units are installed, refrigerant piping must be marked to avoid confusion between pipes of different units.
- A two-way drier shall be mounted at the liquid pipe side at the place where an outdoor unit is connected.

2）Assemble copper pipes

The copper pipe shall be vertically inserted to the specified length. The centerline of two assemblies shall overlap. The position shall be determined for welding. To ensure correct mounting size, do not determine the position with your hands, thus to prevent the copper pipe from moving when heated.

See below for the welding size of copper pipe:



Outer diameter of pipe D (mm)	Min. insert depth B (mm)	Clearance A-D
φ6.35	6	0.05～0.21
φ9.52, φ12.7	7	
φ15.8	8	0.05～0.27
φ19.05, φ22.2, φ25.4	10	
φ28.6, φ31.8	12	0.05～0.35
≥φ35	14	

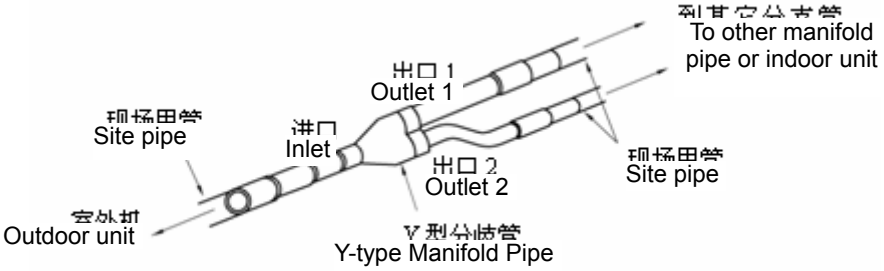
If the mounting clearance is too large, the diameter of coarse pipe may be reduced to an appropriate value to according to applicable specifications.

3）Installation of branch pipe

The branch pipe plays the function to divert the refrigerant flow. Therefore, the selection and installation of branch pipe is very important to the operation of multi-unit. Based on correct selection of branch pipe, the branch pipe must be installed according to installation specifications.

◆ Connection schematics for Y-type branch pipe

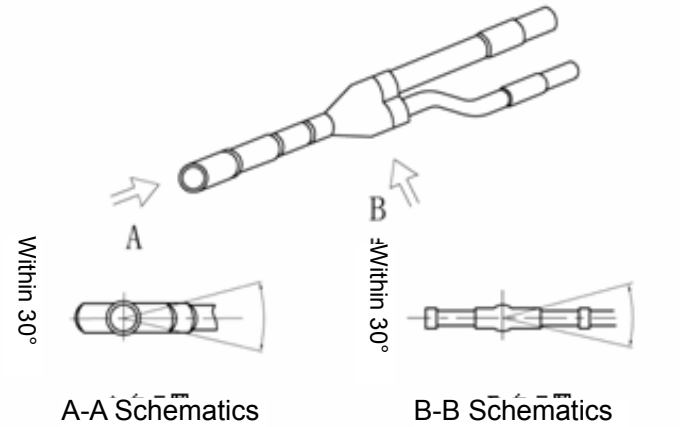
The connection of Y-type branch pipe is as shown below. The inlet is connected to outdoor unit or previous branch; the outlet is connected to indoor unit or next branch.

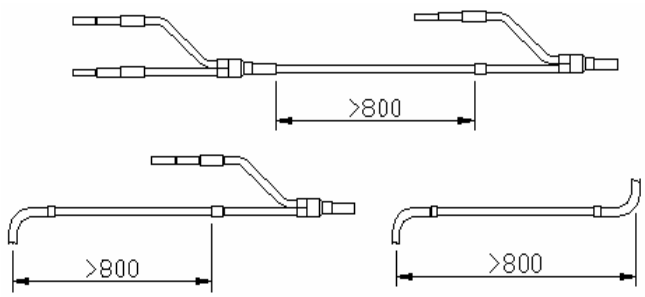


◆ Installation specifications for branch pipe

Placement of branch pipe

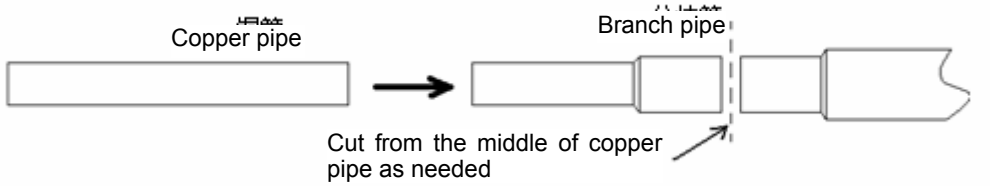
The branch pipe can only placed horizontally. Meanwhile, two branch pipes must be on the same plane. The spacing between two branch pipes must be over 800mm, the spacing between two bends must be over 800mm, and the spacing between branch pipe and bend point must also be over 800mm.



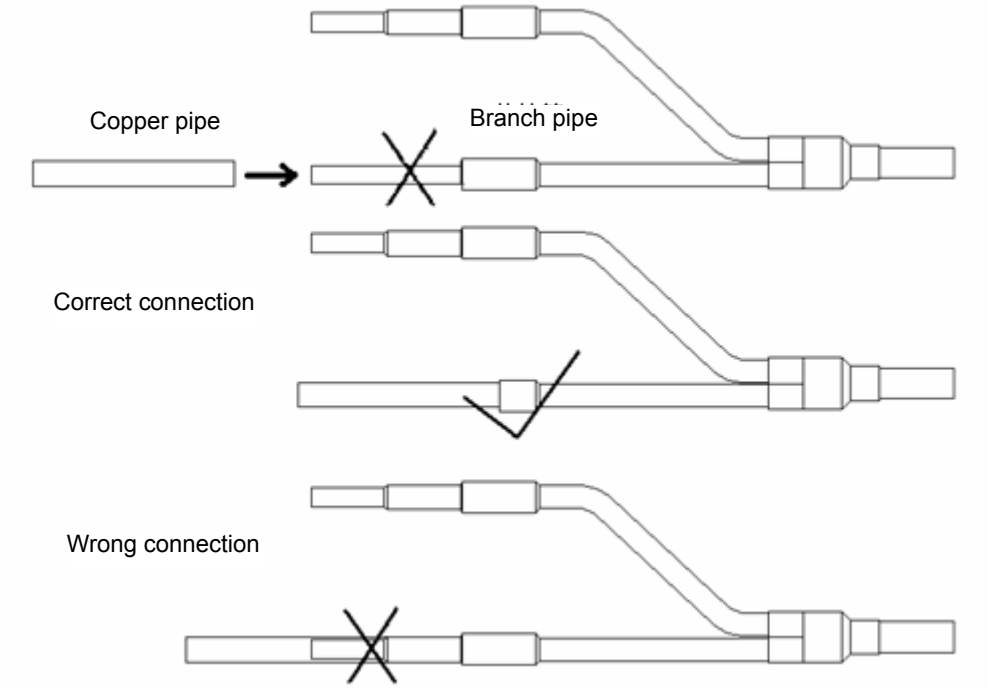


Connection of branch pipe

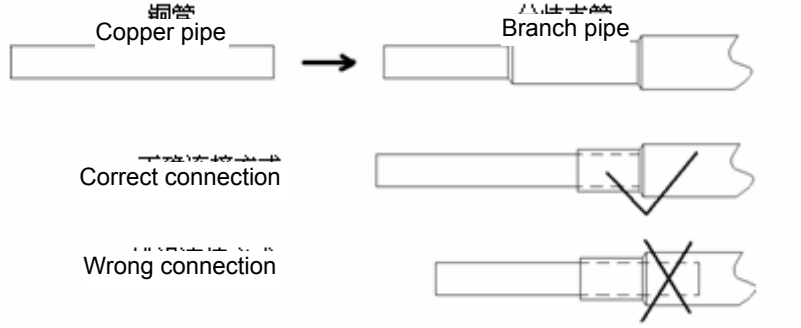
The Y-type branch pipe is installed with additional tube. The purpose is to adjust the different pipe diameters. If the pipe size selected on site is different from the size of branch connector, please use the pipe cutter to cut from the middle of different connection pipes and remove the burrs. Then, insert the copper pipe to appropriate depth. The branch pipes from Gree are all provided with positioning mark.



The connection method that copper pipe is in couple with a smaller branch pipe shall not be used.



Copper pipe shall not be inserted too much for connection with branch pipe.



10.7 Welding of Copper Pipe

1）Braze welding

Materials for braze welding

There are two kinds of braze welding, soft braze welding and hard braze welding. Hard braze welding is required in this case.

Selection of braze welding

Red copper + red copper：brazing filler metal is Bcu93P（GB 6418），and welding flux is not needed.

Flame flux: capable of preventing the surface of copper pipes from oxidation, recommended for use.

Temperature for braze welding：820-860℃ (copper pipe becomes light red)

2）Safety acknowledgement before operation

a. **Safety acknowledgement before operation**

b. Acknowledgement on work suits（helmets, clothes, safety bags and safety shoes）

c. Description of work location and environment

d. Job division shall be made. Job content, method and order shall be indicated. Risk prediction activities shall be performed.

e. “Construction Schedule” shall be worked out.

f. Head of each group shall be assigned.

g. Risks of occurrence of an accident such as electric shock or fire shall be indicated.

h. Instructions on how to use electric machinery properly shall be available.

i. Locations marked with “Staff Only” shall be indicated.

j. An application is necessary for use of open flame and shall be reviewed by on-site safety officer for approval.

k.Instructions given by fire authorities shall be accepted in accordance with local laws and regulations.

l. Tools shall be sorted and counted. Upon knocking off for the day, tools shall be sorted and counted. If necessary, the piping system shall be charged with coolant to avoid exhaustion.

a. Construction personnel must have relevant operation qualification.

Flame operation must be undertaken by qualified persons in accordance with local laws and regulations.

b. Wear coveralls (cotton for the best), safety shoes, safety helmet, leather gloves, protective goggles and anti-dust mask.

Welding torch with back fire arrestor shall be used to ensure safety.

c. Take care not to be burned by flame and heating parts.

d. Gas cylinder shall be handled carefully to prevent leakage.

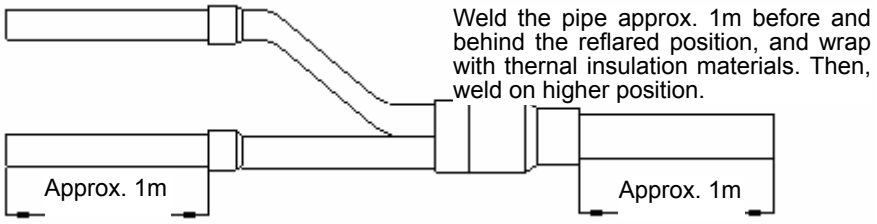
e. Combustible substances in the surrounding areas shall be moved away. If movement is impossible, fire proofing treatment shall be taken properly, such as being covered by flame-proof enclosure.

f. Good ventilation is necessary to avoid breathe in of harmful gas.

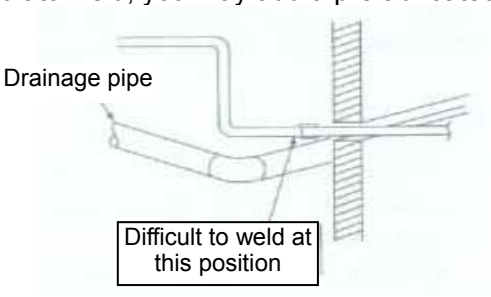
g. Appropriate measures shall be taken if there is a safety problem.

h. Operation on connectors of branch pipes as well as on the surrounding of pipe ends shall be performed on the ground as possible, because heating is difficult to control at a high place and welded part of a branch pipe is prone to be melted to cause leakage.

For example:

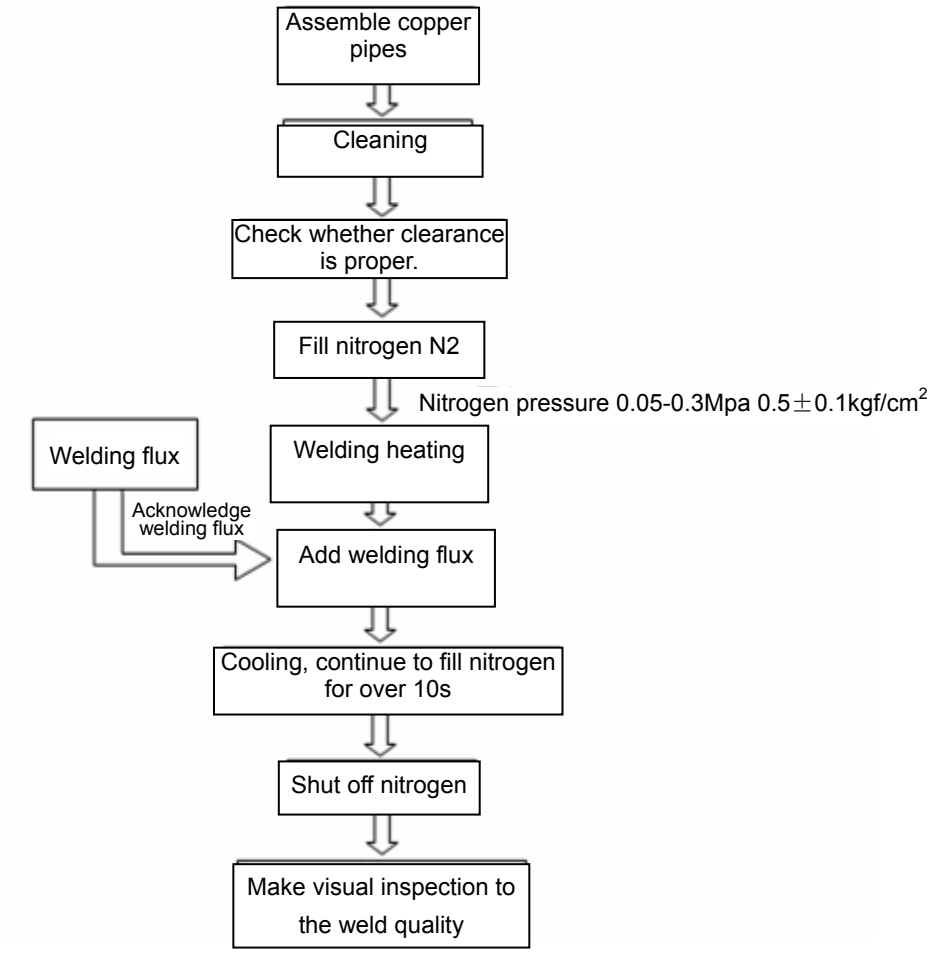

Weld the pipe approx. 1m before and behind the reflared position, and wrap with thernal insulation materials. Then, weld on higher position.
Approx. 1m
Approx. 1m

i. To avoid the position difficult to weld, you may add a prefabricated assembly below.



3）Operation order

Basic procedures for welding:



a. Cleaning of portions for braze welding

Polishing……Removing metal materials at connection portion. (Removing oxidation film using non-woven fabric, abrasive cloth or abrasive paper)

Ungrease……If any oil stain is existent, acetone or spirit solvent shall be used for ungrease treatment.

At the same time, compressed air at 0.8MPa (gauge pressure) shall be used for cleaning. The cleaning shall be repeated not less than 3 times, until there is no dirt discharged.

b. Check whether clearance between pipe and connector is proper.

Put the connector into the pipe and face downward. If the connector does not fall down depending on friction force, the clearance is considered proper.

c. Nitrogen-filled protection

- Since vigorous oxidation would occur on the surface of copper pipe at braze welding temperature, to effectively restrain the generation of oxide coating in copper pipe, nitrogen-filled protection for copper pipe is necessary.
- After copper pipes are assembled, nitrogen shall be filled in copper pipe connectors.
- **Nitrogen charging method：**

Pressure is 0.05~0.3MPa. Nitrogen flow of 4~6L/min (gas flow can be sensed by hand) shall be guaranteed to charge in work pieces.

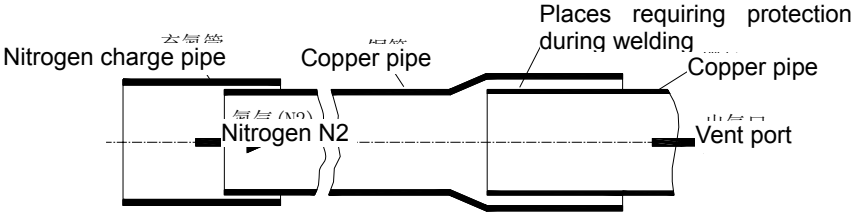
After assembling, nitrogen begins to charge until welding is finished and will continue over 10s during cooling after welding.

※ Main points of nitrogen charge（See the drawing below）

◆ When nitrogen is charged, the press switch on the quick connector and inflator shall be closed to let nitrogen totally filled in the pipe.

◆ Make sure nitrogen reaches all welding connectors in order to effectively discharge air.

◆ A vent port must be available when nitrogen charge is continuously performed, or otherwise gas would escape from gap around connector, making welding stuffing difficult and prone to pores.



d. Welding heating

Notes:

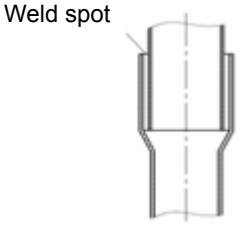
- Braze welding is flame hard braze welding. Relevant safety operating regulations must be abided by.
- Confirm that nitrogen is flowing through before copper pipe is heated.
- Neutral flame or slightly reducing flame shall be used for red copper braze welding. Outer flame is normally used. Copper pipe connectors shall be heated uniformly. Take care to distribute heat in terms of dimension of pipe material. Generally, insert pipe shall be preheated at first for close matching and then swayed along length of connector to make it heated uniformly until braze welding temperature is approached; then copper pipe is heated circularly to reach braze welding temperature (copper pipe becomes light red) and at the same time brazing filler metal is added circularly to fill in the clearance around the connector uniformly; and afterwards, the welding torch is slowly moved away from the pipe and a small amount of brazing filler metal continues to be filled in until smooth fillet is formed.
- During heating, welding rod shall not be burned directly by flame. Heating time shall not be very long.
- During welding, flame shall be controlled well on its direction and kept away from rubber casing, sponge and cables.

e. Post-welding treatment（cooling）

- After welding, in the condition of nitrogen protection available, the connector shall be heated until the copper pipe changes color (200-300°C), i.e. annealing treatment.
- Before welding seam becomes completely solidified, welded pieces shall not be moved or shocked.
- For welded piece cooled by water, take care not to let water enter into copper pipe and try to prevent residue water flowing into the pipe when welded piece is laid aside.

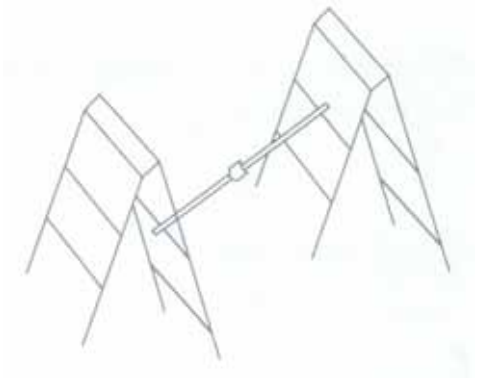
f. Quality and inspection of braze welding

Welding seam should have smooth surface. Fillet should be even and full with natural arc transition. Braze welding connector should be free from defects such as over-burning, welding blockage, crack, rough surface of welding seam and burning through. Welding seam should be free from defects such as pore, slag inclusion, underfill, rosin joint and overlap.

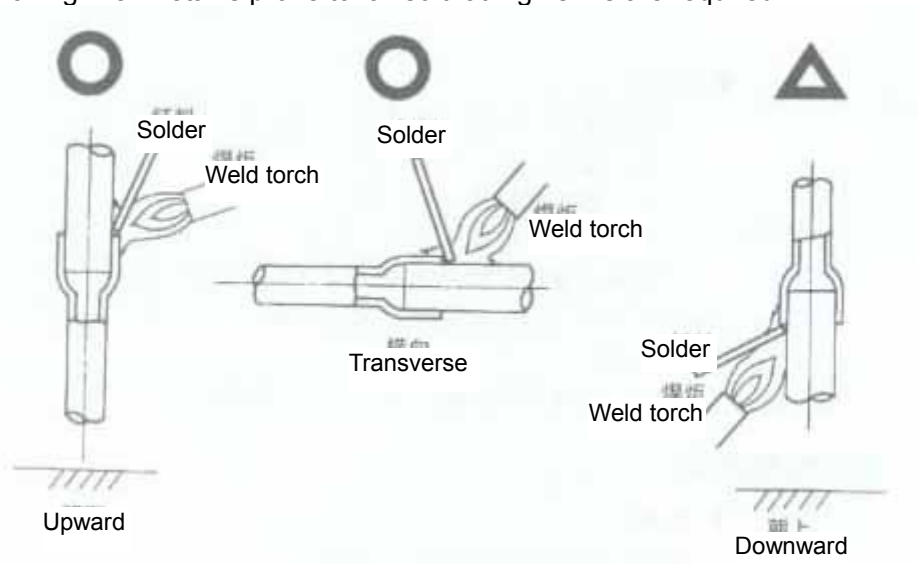


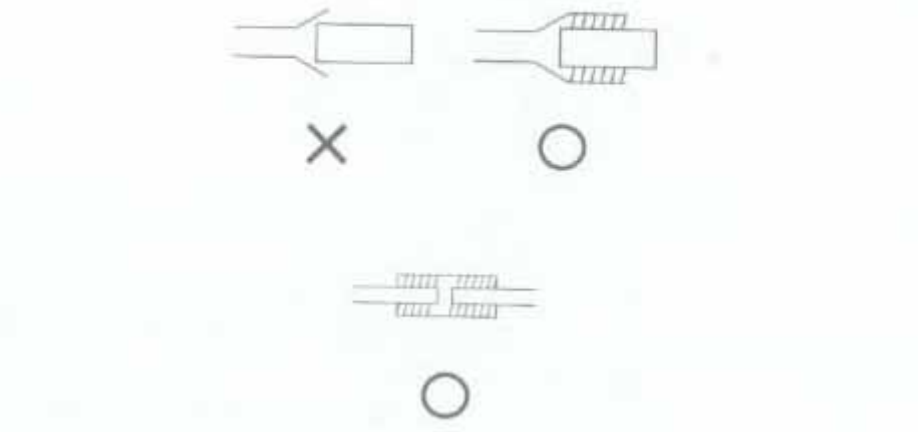
4）Others

◆ When braze welding is to be performed underneath, a simple support shall be built, such as two ladders.



◆Braze welding shall be easy to operate downward or in transverse direction. In upward operation, brazing filler metal is prone to fall so that high skills are required.





◆Cooling

To avoid getting a burn in following processes, common wet cloth (humidity content is low, meaning that there shall not be water drips when welded part is cooled; and because shrinkage factor of copper is different from that of welding material, too quick cooling that would cause cracking of braze welding shall be avoided) can be used for cooling welded parts.

◆The following items shall be checked after welding is completed

● Is there any pore or hole on welded part?

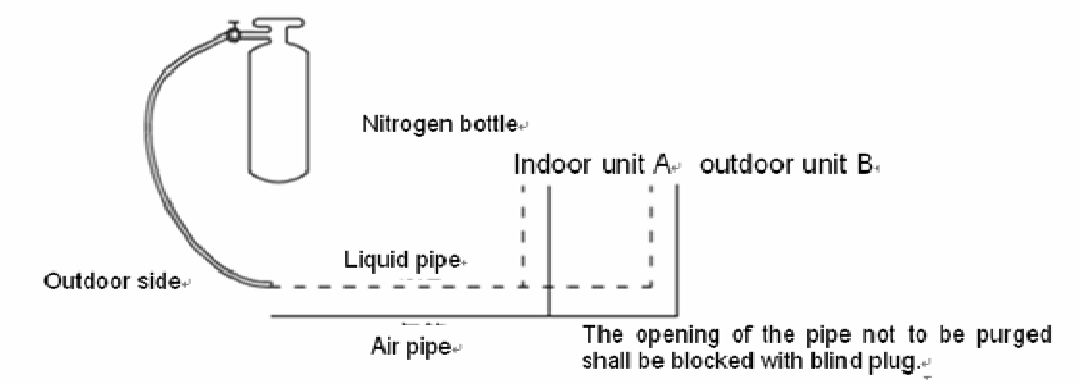
● Is there evident “sagging of brazing filler metal”?

10.8 Cleaning of Refrigerant Piping

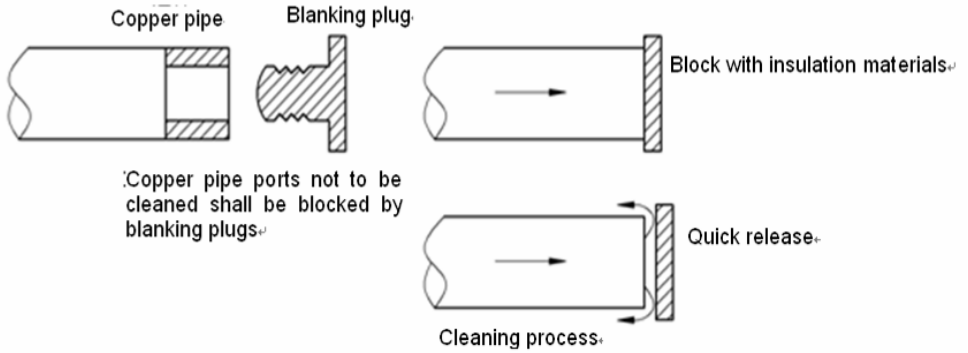
After a section of pipeline is welded, cleaning of piping is necessary.
Nitrogen pressure is utilized to remove foreign matters (such as dust, water and beryllium oxide caused by welding) in the piping.
1）Main purposes of cleaning are as follows：

- To eliminate oxide caused by insufficiency of nitrogen-filled protection during pipe welding.
- To remove foreign substances and water that may enter the piping due to improper storage and transport.
- To check whether big leakage is existent at connections of the piping between indoor unit and outdoor unit

2）Cleaning steps：
a. Mount a pressure gauge on nitrogen cylinder;


Nitrogen bottle
Indoor unit A
outdoor unit B
Liquid pipe
Outdoor side
Air pipe
The opening of the pipe not to be purged shall be blocked with blind plug.

b. High pressure end of the pressure gauge is connected to the refrigerant filling nozzle of the small pipe (liquid pipe)
c. All copper pipe ports outside the A side of indoor unit shall be blocked by blanking plugs.

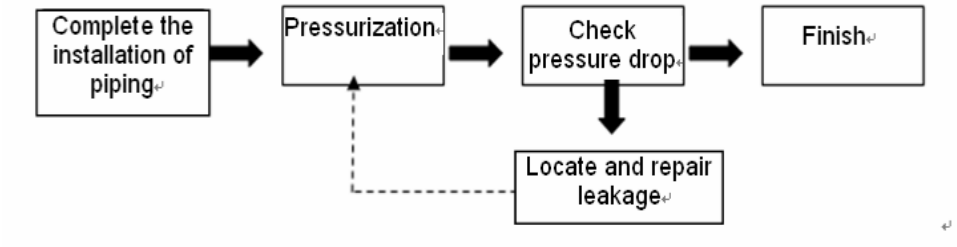

Copper pipe
Blanking plug
Block with insulation materials
Copper pipe ports not to be cleaned shall be blocked by blanking plugs
Quick release
Cleaning process

d. The valve on nitrogen cylinder shall be opened to maintain pressure at 28Kgf/ cm^2
e. Check whether nitrogen flows through the liquid pipe of indoor unit A
f. Cleaning
The mouth of the pipe shall be blocked with insulation material held by hand until pressure rises to a level difficult to be withstood, and at the moment the insulation material shall be released quickly. And then the mouth shall be blocked again. Repeat such procedures several times. Afterwards, use a wood board posted with white paper to check it. If there is not evident dirt on the white paper, the pipe will be considered clean.
g. Shut off the main valve of nitrogen
h. Repeat the above procedures on indoor unit B
i. After cleaning of liquid pipe, gas pipe shall be cleaned in the same way.
10.9 Pressure Maintaining and Leak Hunting
1）Pressure maintaining of refrigerant piping
After refrigerant piping of a system is welded

- A refrigerant filling nozzle shall be welded respectively on the big pipe and on the small pipe on the outdoor unit side.
- Pipes connected to the end of indoor unit and outdoor unit shall be clamped to be flat and welded to be sealed.

Steps of pressure maintaining and leak hunting of refrigerant piping are as follows:

Operating Steps:



◆ Pressurization

Use nitrogen to add pressure from Freon nozzle of the gas and liquid pipe on outdoor unit side:

Step 1: Increase the pressure to 0.3MPa and wait for 3 minutes or longer

Step 2: Increase the pressure to 1.5MPa and wait for 3 minutes or longer

The step 1 and 2 are focused on checking the significant leakage point. If any, reweld immediately or repair the leakage point.

Step 3: Increase the pressure to 2.5MPa and keep it for approx. 24 hours to check the small leakage.

Though the pressure is increased to 2.5MPa, it cannot be guaranteed to find out the small leakage if the waiting time is too short. Therefore, the pressure in Step 3 must be kept for 24 hours.

Note: During pressure maintaining after nitrogen is filled, the pressure gauge shall not be dismantled, because activities of dismantling or mounting pressure gauge would affect pressure change.

◆Check pressure drop

Criteria for Inspection eligibility:

※ Except for temperature influences (pressure changes about 0.01MPa for temperature change of 1°C), if pressure drop is not more than 0.02MPa within 24h, the system will be eligible. For example, nitrogen is filled to reach 2.5MPa at 30°C; after 24 hours, when temperature becomes 25°C, the system will be eligible if pressure is over 2.43 MPa and ineligible below 2.43 MPa.

※ If ineligible, leak sources must be located. After leak sources are found, re-welding or repair welding is necessary. Then, the above procedures shall be repeated. Nitrogen is filled, pressurized and maintained until pressure drop remains within required range.

◆Leak check

[Check 1] When pressure drop is found, leak hunting shall be performed in the ways as follows:

a. By ears…….to listen voices related to leakage

b. By hands……to sense whether leakage is existent at connecting parts

[Check 2] If no leakage is found using the above methods, nitrogen shall be discharged and refrigerant shall be filled in to reach 0.5MPa.

a. By soap and water……soap bubbles will show leakage positions if any.

b. Detector (such as halide detector) can be used for leak hunting

Using the above methods, check all possible leak sources.

If leakage still fails to be located, sectional check shall be taken for refrigerant piping that would be divided into multiple check portions for locating leak source in a certain section.

2）Pressure maintaining and leak hunting of the system（with refrigerant piping in connection with indoor unit and outdoor unit）

When refrigerant piping is to be installed, pressure maintaining and leak hunting is required for the piping. After refrigerant piping is in connection with indoor unit and outdoor unit, pressure maintaining and leak hunting is also required. The purpose of the test is to check whether any leak is existent at threaded connection of indoor unit and outdoor unit and at new welded points.

Steps:

◆Nitrogen is charged to reach 2.5MPa and remains at the pressure for 24h (nitrogen shall be filled from refrigerant filling nozzles at the big valve as well as the small valve using a pressure gauge; during pressure maintaining after nitrogen is charged, the pressure gauge shall not be dismantled.)

◆Observe whether pressure changes in 24 hours. (for eligibility criteria, see pressure maintaining and leak hunting of refrigerant piping in 5.5.2)

◆If any leakage, please check threaded connections and new welded spots of indoor unit and outdoor unit. Repair welding shall be performed immediately. Afterwards, pressure maintaining is repeated until eligibility is reached.

10.10 Heat Preservation of Refrigerant Piping

1）Connection of thermal insulation pipe

Carry out thermal insulation to the refrigerant pipe after confirming that it has no leakage.
Please perform thermal insulation to the refrigerant pipe according to the steps below

◆Check if the thermal insulation pipe has met the thickness requirements. If not, the condensing water is easy to attach on thermal insulation pipe and finally drips. The thickness requirements are shown below:

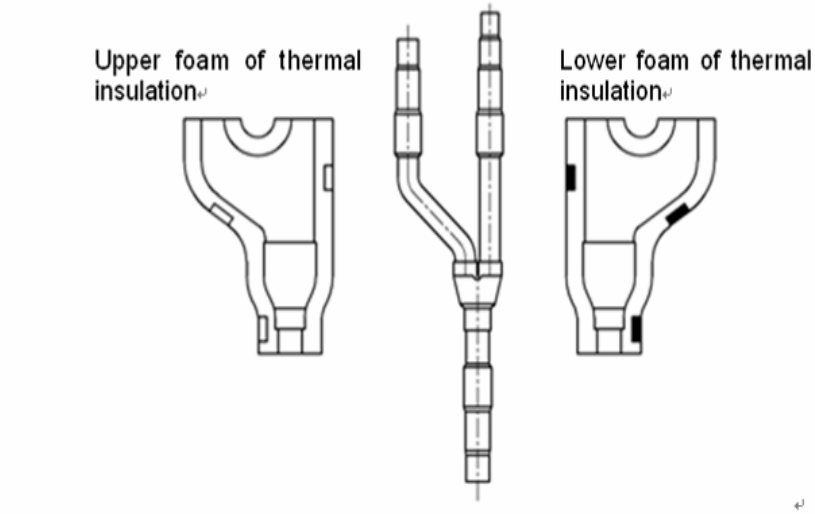
Refrigerant Pipe (mm) (Outer Dia. x Thickness)	Thickness of Thermal Insulation Materials (mm)
Φ6.35×0.5	≥10
Φ9.52×0.71	≥10
Φ12.7×1	≥15
Φ15.9×1	≥15
Φ19.05×1	≥15
Φ22.2×1.5	≥20
Φ25.4×1.5	≥20
Φ28.6×1.5	≥20
Φ34.9×1.5	≥20

◆Wrap the refrigerant pipe according to required thickness. The clearance between thermal insulation pipes shall be sealed with self-adhesive sticker.

◆Wrap the thermal insulation pipes with tapes, thus to extend their ageing time.

2）Thermal Insulation of Branch Pipe

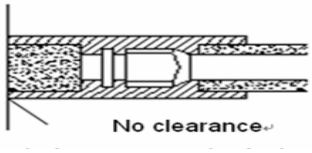
Each branch pipe is provided with foam. Wrap the branch with the included foam. The upper and lower foam shall be sealed with self-adhesive sticker. All the sections with or without foam shall be wrapped by using thermal insulation pipe. The butt connection between foam and thermal insulation pipe shall be sealed with self-adhesive sticker.



3）Cautions:

The thermal insulation materials shall be able to withstand the pipe temperature. For heat pump unit, it is required to withstand a temperature not lower than 70℃ on liquid pipe side and not lower than 120℃ on gas pipe side. For cooling-only unit, it is required to withstand a temperature not lower than 70℃ on both liquid pipe side and gas pipe side. Example: Heat resistant PVC foam (over 120℃); Foam PVC (over 100℃)

- ◆ The connector between indoor unit and outdoor unit shall be wrapped with thermal insulation materials, and shall have no clearance to the wall on which the outdoor unit is mounted, as shown below.



- When wrapping the thermal insulation tape, each circle shall suppress half of the previous circle. To avoid reducing the thermal isolation effect, do not wrap the tapes too tight.
- After completing the protection work and wrapping the pipes, use the sealing materials to block the holes in the wall.

10.11 Vacuum Pumping

1）Purposes of vacuum pumping

- Discharge air and nitrogen in the piping to obtain vacuum state.
- Vacuum is dry, capable to remove moisture in the system.

Under atmospheric pressure, the boiling point of water is 100°C. But with increased vacuum degree created by vacuum pump, the boiling point rapidly reduces. If boiling point reduces below ambient temperature, moisture in piping will be evaporated. If vacuum is 0Kgf/cm^{2}of absolute pressure (gauge pressure is -1Kgf/cm^2), moisture in the system can be evaporated totally

2）Selection of vacuum pump

Proper vacuum pumps must be selected before vacuum pumping. Insufficient capacity of selected vacuum pump would lead to overtime of vacuum pumping and fall short of the requirement for vacuum degree. A proper vacuum pump can obtain vacuum degree of 0Kgf/cm^2 (gauge pressure -1 Kgf/cm^2) after vacuum pumping

Features of a vacuum pump shall be determined by two factors as follows:

- Selection of a pump that can meet expected requirement (i.e. gauge pressure of -0.1MPa shall be obtained)
- Exhaust flow is high (over 40L/min).

The following vacuum pumps are recommended.

Model	Maximum vacuum air displacement	Use	
		Air discharge	Vacuum drying
Lubricant shaft pump	100L/min	Suitable	Suitable
Non-lubricant shaft pump	50L/min	Suitable	Suitable

Comparison table of different pressure units is as follows:

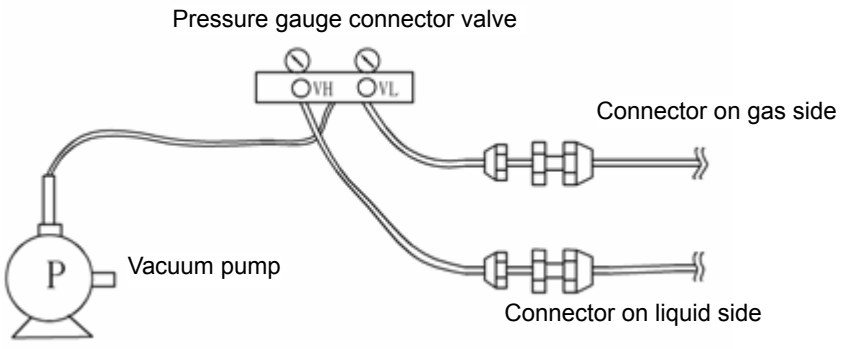
	Unit	Standard air pressure	Vacuum degree
Relative pressure	kg/cm^2	0	-1.033
Absolute pressure	kg/cm^2	1.033	0
mm Hg	mmHg	0	-755

3）Vacuum pumping

The steps are as follows:

a. Expel the nitrogen after leakage detection;

Connect the pressure gauge to Freon nozzle on outdoor liquid valve and gas valve, and connect a vacuum pump. Then, establish vacuum simultaneously from high pressure side and low pressure side.



Start the vacuum pump and turn on “L_O” and “H_I” knobs

b. Continue for 0.5~1.0 hour after the vacuum level reaches -0.1MPa (gauge pressure -1kgf/cm^2). Then, close the “VH” knob on high pressure end and “VL” knob on low pressure end to stop the vacuum pump.
c. Remove the hose connected to vacuum pump and reconnect it to the refrigerant tank. Expel the air in the hose. Open the “VL” knob on low pressure end to charge refrigerant to the system piping. When the pressure reaches 0.0kgf/ cm^2, close the “VL” knob on low pressure end.
d. Remove the hose connected to refrigerant tank and reconnect it to vacuum pump. Start the vacuum pump and open the “VH” knob on high pressure end. Pump for 30 minutes from high pressure end and then open the “VL” knob to pump from low pressure end, until the vacuum level reaches -0.1MPa (gauge pressure -1kgf/cm^2).
e. When the procedures for vacuum pumping are finished, refrigerant shall be charged. If the vacuum level reaches -0.1MPa (gauge pressure) or lower, the vacuuming process is then ended. Stop the vacuum pump and place still for 1 hour. Then, check the vacuum level for any change. In case of any change, it indicates that there is leakage. In this case, proceed to leakage detection and repair.

10.12 Refrigerant Charge

1）Calculation method for refrigerant charging

Refrigerant shall be charged according to calculated amount specified in engineering drawings.

Method for calculation of added refrigerant volume (based on liquid pipe)

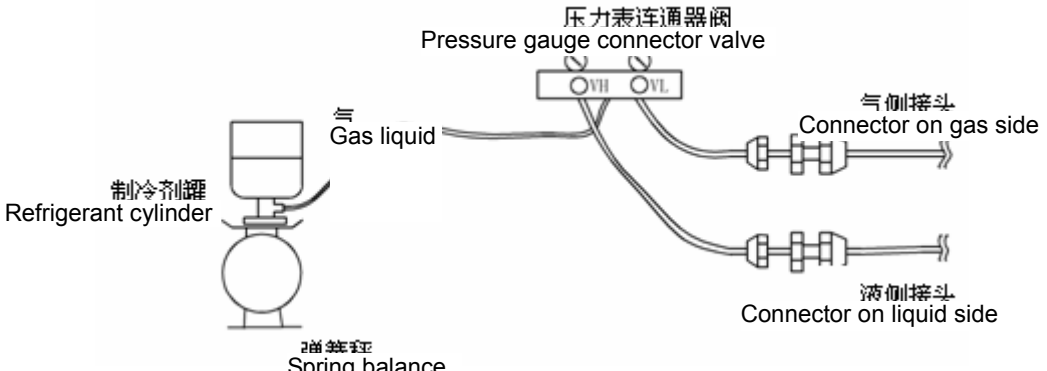
Mass of refrigerant to be charged =∑ length of liquid pipe × refrigerant charge amount of every meter of liquid pipe.

Medium	Amount of refrigerant charge for every meter of liquid pipe（kg/m）						
	Φ25.4	Φ22.2	Φ19.05	Φ15.9	Φ12.7	Φ9.52	Φ6.35
R22	0.54	0.41	0.29 0.187	0.187	0.12	0.06	0.03
R410a		0.35	0.25	0.17	0.11	0.054	0.022

Note: a. Standard pipe length is 15m. If refrigerant piping (L) is shorter than or equal to 15m, no additional refrigerant is needed. If piping is longer than 15m (based on liquid pipe), more refrigerant shall be added. The above table shows how much refrigerant shall be charged for every one additional meter of piping.
b. Electronic balance shall be used for refrigerant charge
c. Thickness of pipe wall shall be 0.5～1.0mm and pressure-bearing capability shall be 3.0MPa
d. The longer the piping, the more refrigerating capacity and heating capacity shall be weakened.

2）Steps of refrigerant charge are as follows：

a. The connecting hose of refrigerant cylinder shall be connected to the connector of the pressure gauge. The valve V_H shall be opened to discharge air in the hose. Then, the high pressure end of the pressure gauge shall be connected to the refrigerant filling nozzle on the small valve of outdoor unit.



b. Open pressure gauge valve V_H, then fill liquid state refrigerant into the liquid pipe side until required amount is reached.

If refrigerant can not be charged in system unless the unit is turned on, let the system run at

full-load cooling mode. Open V_H and discharge air in the hose. The high pressure end of pressure gauge is connected to the refrigerant filling nozzle on the small valve of outdoor unit. Open V_L and charge gas state refrigerant into the gas pipe until required charging amount is reached.
c.Observe electronic balance or spring balance. When required amount is reached, the valve shall be closed very quickly and then source valve on the refrigerant valve shall be shut off.
d. The amount of charging refrigerant shall be recorded.
Refrigerant charge shall be recorded as per the following table.

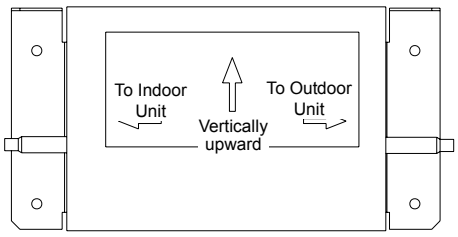
Unit Mark	Amount of charging refrigerant（Kg）
Unit 1	
Unit 2	
……	
Unit n	

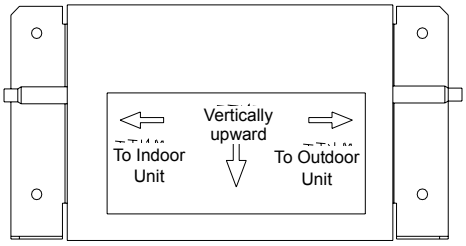
11 INSTALLATION OF ELECTRONIC EXPANSION VALVE PARTS

11.1 Direction Requirements

To ensure normal operation of the unit, please connect the electronic expansion valve sub-assembly as shown below.

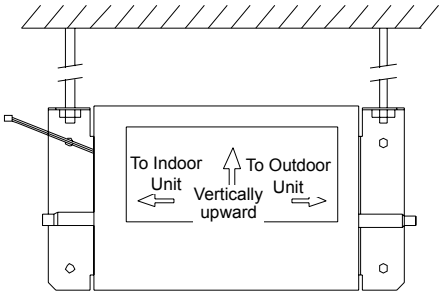
Ensure that the vertical arrow labeled on electronic expansion valve sub-assembly is pointed upward.



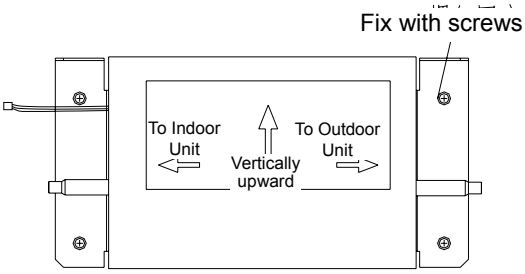


√Arrow Upward X Arrow Downward

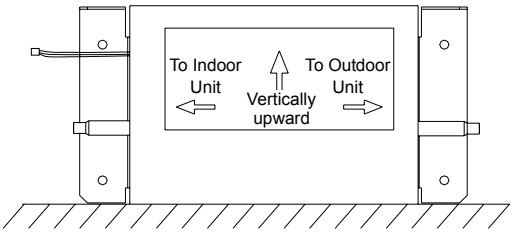
（1） Firstly, fix the electronic expansion valve sub-assembly properly. Several operating methods are available:



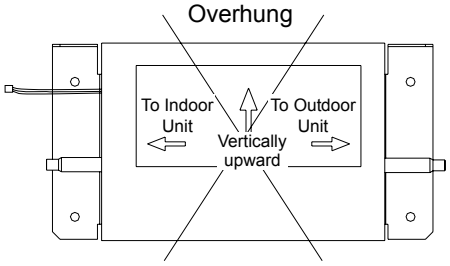
①！ Suspend by using screw rod



②Use screws to fix onto wall

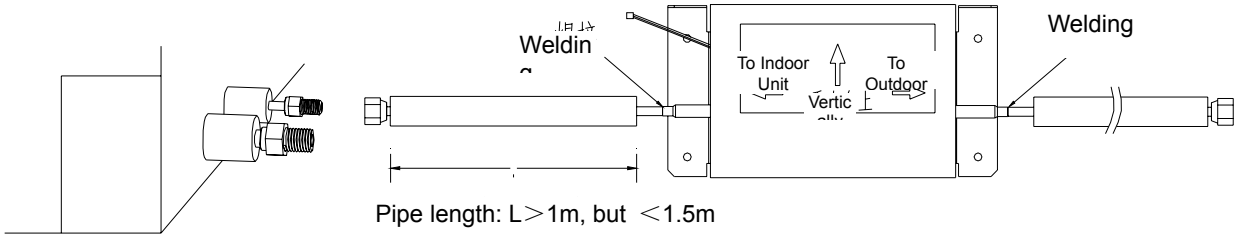


③Directly place on ceiling plane



⚠ Caution: Never place overhung in air.

（**2**） The indoor unit shall be firstly connected to a section of pipe (connected by nut). Then, connect the pipe to the electronic expansion valve sub-assembly (by welding).

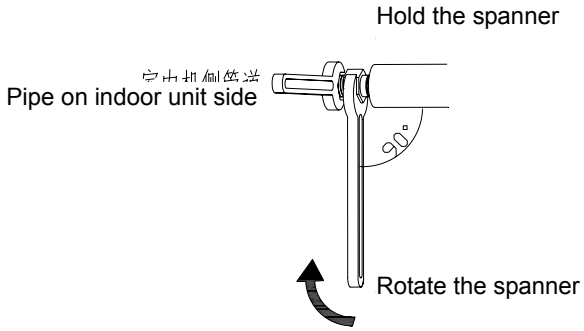


Pipe length: L＞1m, but ＜1.5m

⚠ **WARNING: The length of connection pipe must be 1m≤L≤1. 5m. The electronic expansion valve sub-assembly must be connected to the indoor and outdoor unit in a direction as marked. If connected in reverse direction, severe error will be caused to the**

unit.

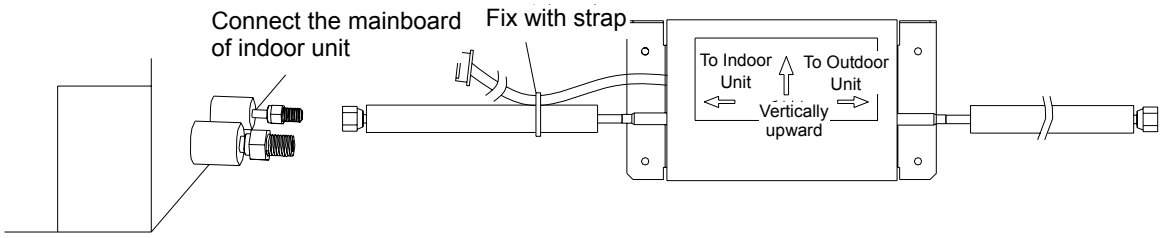
（3） Pipe connection: Tighten the nuts with your hands correctly. Then, use another spanner to hold the pipe joint on machine side and use torque wrench to tighten securely.



（4） Cable connection of electronic expansion valve sub-assembly

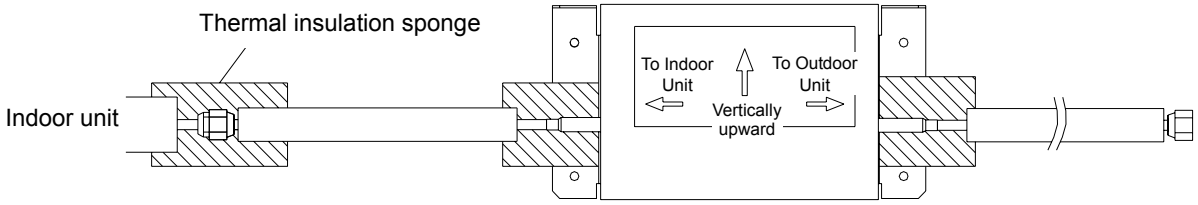
① To avoid loosening and sagging down, please use strap (small) to fix the cable of electronic expansion valve sub-assembly onto the pipe or other objects.

② When connecting the cable of electronic expansion valve sub-assembly, please take care to prevent the cable from contact with the hot or humid objects.



（5） Final treatment: The section where the pipe is connected must be wrapped for thermal insulation.

⚠WARNING!
Please ensure the pipe is fully covered by sponge and not exposed in air. Condensing water will be generated on the pipe if the thermal insulation is poor.



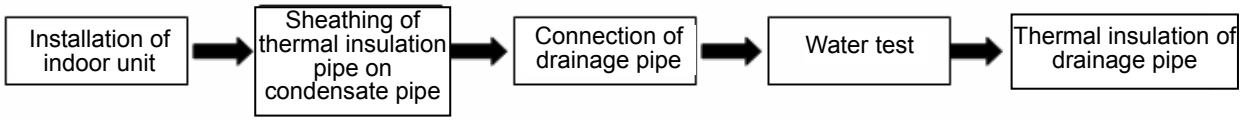
12 INSTALLATION OF CONDENSATE PIPE

12.1 Material Quality Requirements for Condensate Pipe

Generally, the condensate pipe shall be water supply U-PVC pipe, adhered by using special glue. The other materials available include: PP-R pipe, PP-C pipe and hot-dipped galvanized steel pipe. It is not allowed to use aluminum plastic composite pipe.

8.2 Key Points for Condensate Pipe Installation

1）.Work Order


Installation of indoor unit
Sheathing of thermal insulation pipe on condensate pipe
Connection of drainage pipe
Water test
Thermal insulation of drainage pipe

2). Determine the direction and elevation of condensate pipe before installation. To ensure the

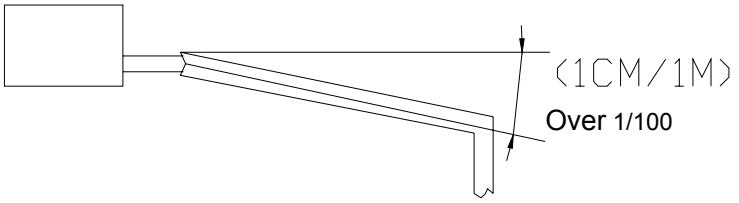
gradient smooth and straight, avoid intersecting with other pipelines. The height of the clamp fixing the pipe hanger frame shall be adjustable and fixed from the outer of thermal insulation.

3).Distance between hanger frames:

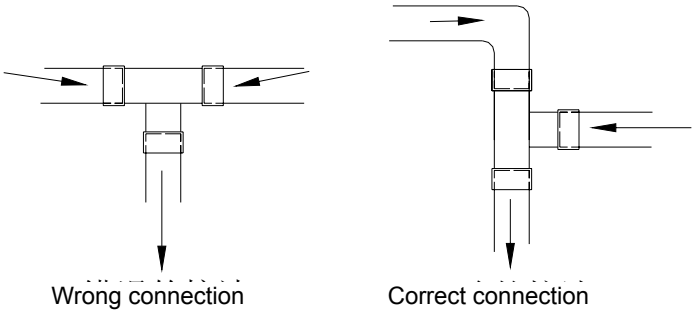
Outer diameter of water pipe (mm)	ф≤25	32＞ф≥25	ф≥32
Spacing between horizontal pipes (mm)	800	1000	1500
Spacing between standpipes (mm)	1500		2000

Each standpipe shall have two hanger frames at least.

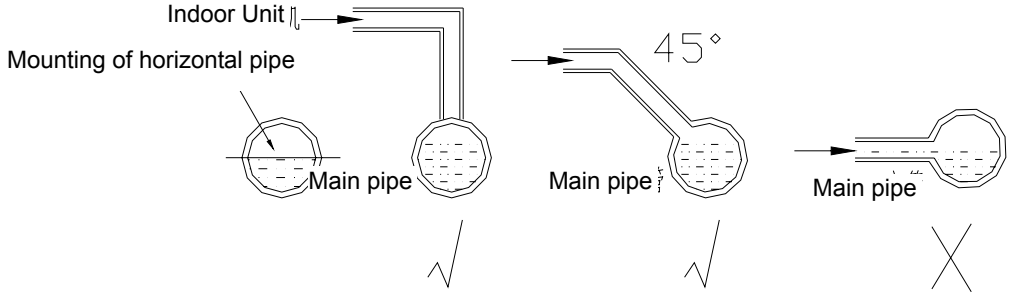
4). The gradient of condensate pipe shall be over 1% and the gradient of main pipe shall not be less than 0.3%, while there shall be no overhanging slope.



5). When connecting the 3-way section of condensate pipe, the 2-way straight section on 3-way pipe shall be on the same gradient. The two ends of 2-way section shall not have different gradient. See the schematics below:



6). Confluence toward the horizontal pipe shall be best from the upper. Back flow is easy to occur if from the lengthwise direction.

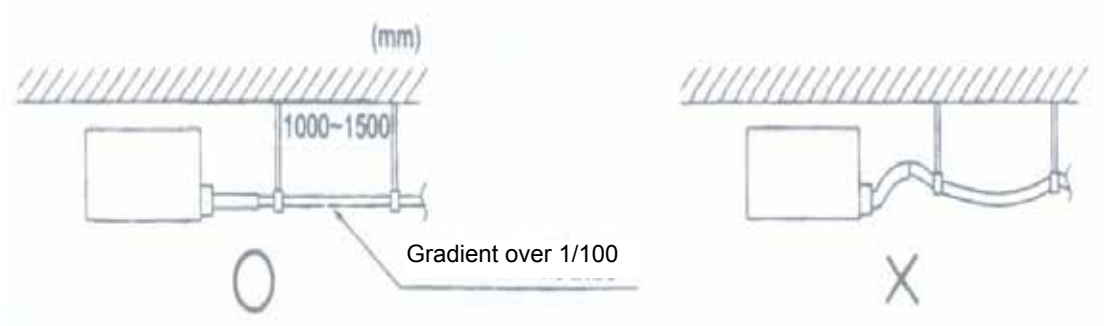


7）Do not tie the condensate pipe and refrigerant pipe together.

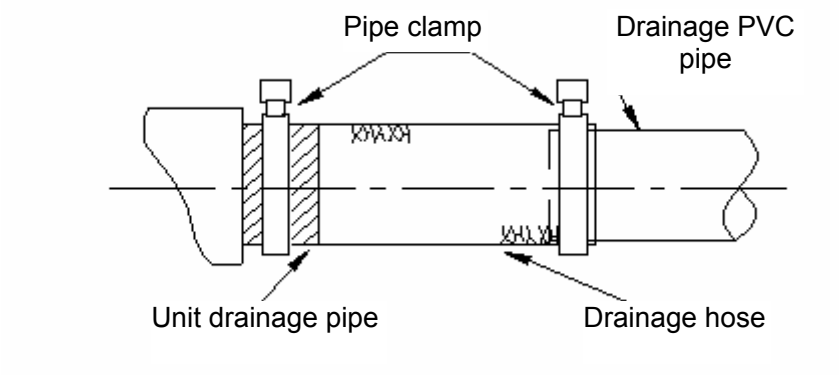
8) To ensure smooth drainage of condensate, a vent hole shall be set at the highest point of drainage pipe.

9) Carry out water flow test and full water test after the pipe connection is completed. On one hand, check if the drainage is smooth; on another hand, check the piping system for any leakage.

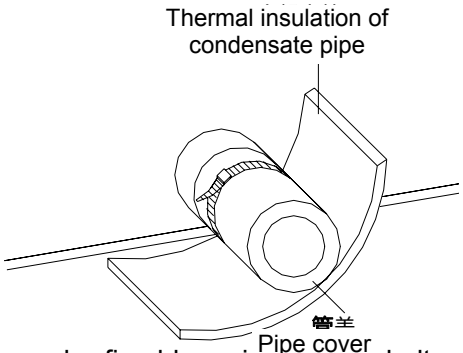
10) Steel sheath shall be provided to the pipe crossing the wall or slab. The pipe joint shall not be positioned within the sheath. The steel sheath shall be flush with the wall surface or slab base, but 20mm higher than the slab base. The sheath shall not affect the pipe gradient. The clearance between pipe and sheath shall be blocked by using flexible inflammable materials. The sheath shall not be used as the supporting point of the pipe.
11) The joint of thermal insulation materials must be adhered by using special glue and then wrapped with plastic tape having a width not less than 5cm to avoid condensing.
12). Ensure a gradient over 1% when connecting the drainage pipe to the indoor unit.



13) When connecting the drainage pipe to the indoor unit, please fix with the included pipe clamp and do not use glue water, thus to ensure easy repair.
14) Installation requirements for auxiliary drainage pipe

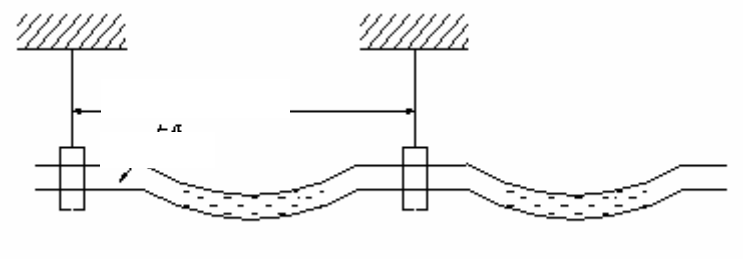


The auxiliary drainage pipe must be thermally insulated:

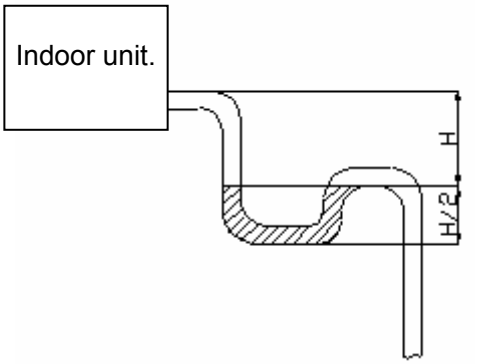


15) The long drainage pipe may be fixed by using hanger bolts, thus to ensure a gradient of 1/100 (PVC cannot be bent).

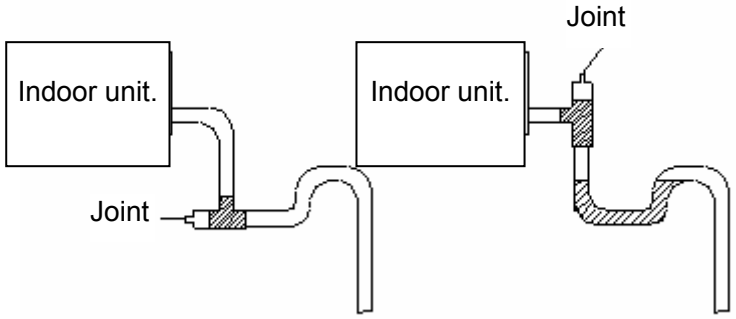
The spacing between the supports of horizontal pipe is 0.8-1.0m. Twisting will be caused and thus air bag will be formed if the spacing is too high. Once the air bag is formed, the pump can only compress the air bag no matter how forcible it pushes, but there is no flowing water, thus resulting in abnormal water level. This will cause flooding of the ceiling.



16). If the air flow of indoor unit is high, this might cause negative pressure and result in return suction of outdoor air. Therefore, U-type water trap shall be designed on the drainage side of each indoor unit.



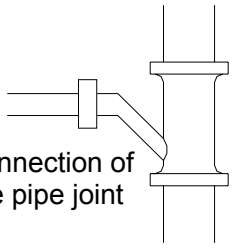
- Install water trap as shown below
- Install one water trap for each unit
- Installation of water trap shall consider easy cleaning in the future.



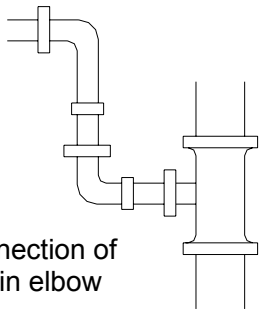
17) Connection of drainage branch pipe to the standpipe or horizontal pipe of drainage main pipe

The horizontal pipe cannot be connected to the vertical pipe at a same height. It can be connected in a manner as shown below:

N01:3-way connection of drainage pipe joint

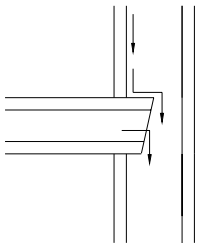


NO2: Connection of drain elbow



Connection of drain elbow

NO3: Connection of horizontal pipe



Connection of horizontal pipe

Drainage pipe is requisite for air conditioner unit. During cooling, the moisture in the air will condense on the surface of evaporator. Such condensing water must be drained out of the unit. Meanwhile, the drainage pipe has an important role to determine if the air conditioner can plays its full functions.

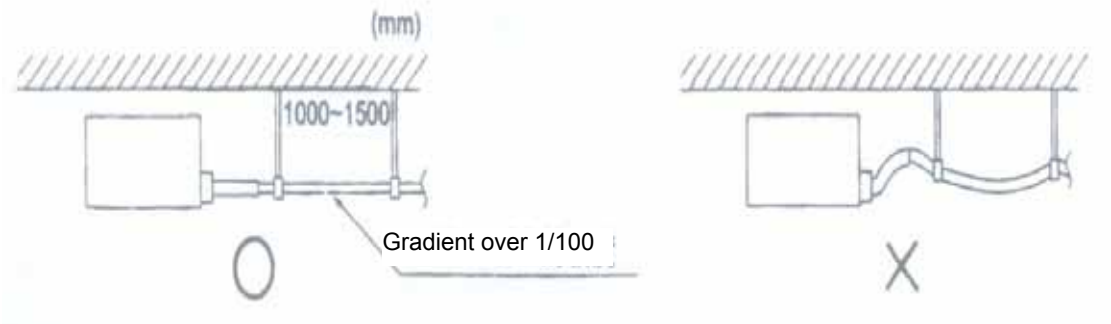
18). All the condensate pipes must be installed at a distance over 500mm from the electric box of the unit.

12.2 Installation of Drainage Pipe for Different Types of Indoor Unit

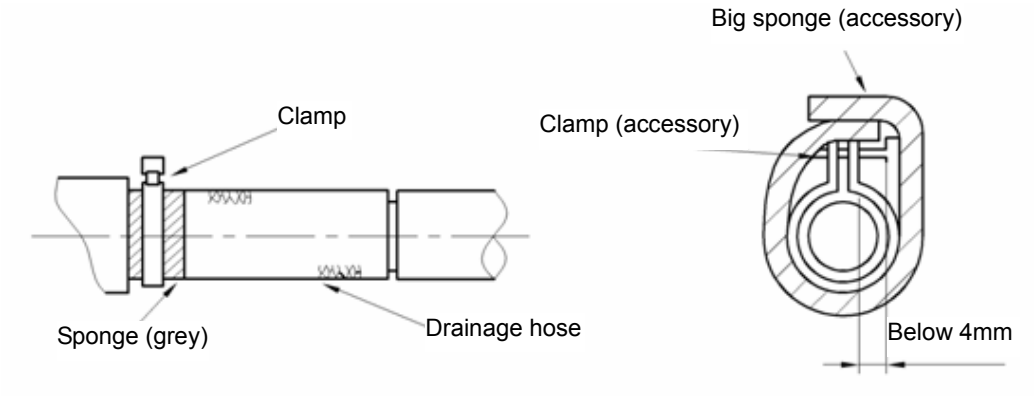
1) Duct-type Indoor Unit (Including General Static Pressure and Low Static Pressure)

a. Installation of drainage pipe

- The diameter of drainage pipe shall be equal to or higher than the diameter of connection pipe. (PVC pipe: Dimension: Outer diameter 25mm, 32mm)
- The drainage pipe shall be short and has a down gradient of 1/100 at least, thus to avoid air bag.
- To ensure that the drainage hose will not be bent and has enough gradient, a distance of 1 ~ 1.5m shall be kept between the hanger frames.

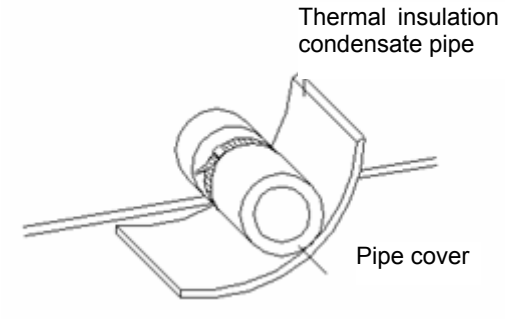


- Use drainage pipe and clamp.
  Insert the drainage hose to the root. From the middle of white tape, tighten the clamp until the tightening distance to the screw head is shorter than 4mm.
  A. For thermal isolation, use sealing tape to wrap the drainage pipe and clamp.
  B. The indoor drainage hose shall be thermally insulated.



C. To prevent foreign articles from entering the pipe, please minimize the bend of pipeline, thus to ensure cleanliness of the drainage elbow.

D. The drainage pipe must be wrapped with thermal insulation tube, thus to avoid condensing on the outer surface of drainage pipe. See below for the thickness of thermal insulation tube.



Drainage Pipe (mm)(Outer Dia)	Thickness of Thermal Insulation Materials (mm)
Φ17	≥15
Φ27	≥20
≥34.9	≥20

※ Notes:

E. The inclination of drainage hose① shall be within 75mm, so that the drainage insert will not bear excessive force.

F. To connect the drainage pipes for multiple machines, please use the method of multi-pipe collection, as shown below.

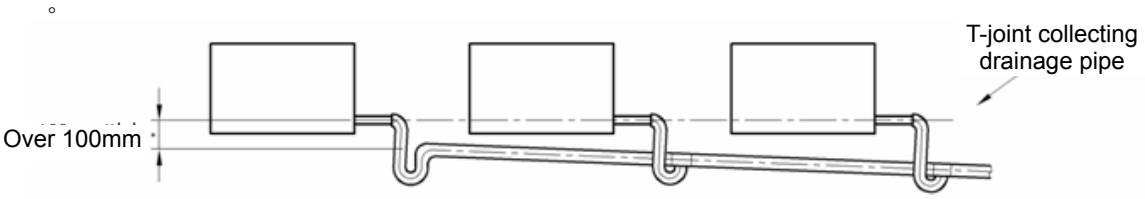


Fig. The specification of collecting drainage pipe shall be suitable to the working capacity of the unit

We may collect the drainage pipes of all the indoor units in one system (An outdoor unit and all the indoor units connected to this outdoor unit are called one system), or collect the drainage pipes of all the indoor units in several systems.

Notes: The ceiling height must be considered, and a specific gradient shall be ensured along the water flow direction.

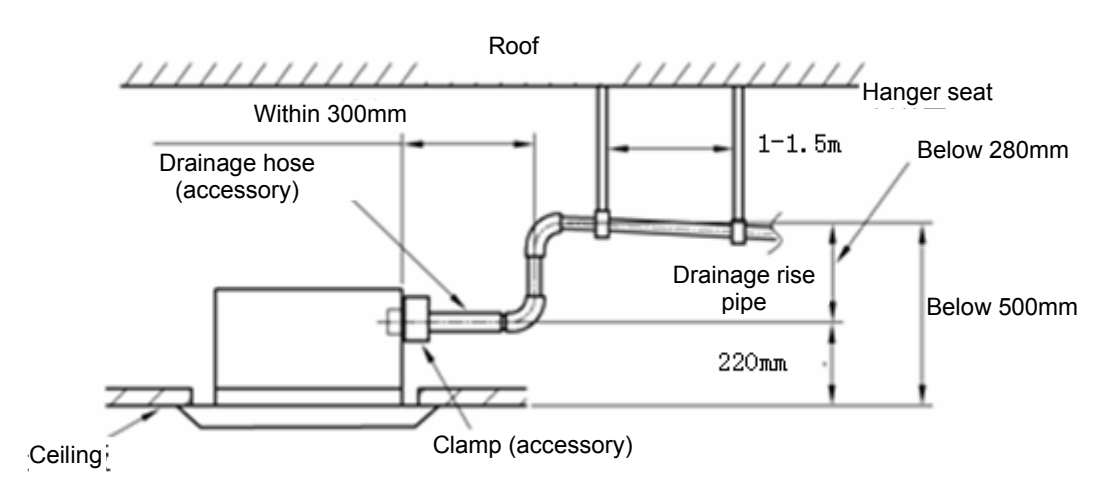
2）Cassette Type (Four-sided Outlet)

a. Installation of drainage pipe

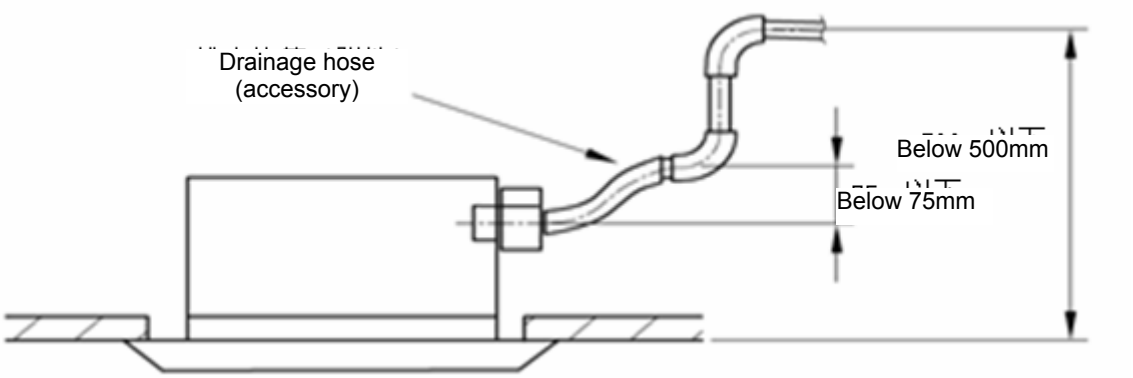
- The drainage pipe shall be installed to ensure smooth flow of water.

- The diameter of drainage pipe shall be equal to or higher than the diameter of connection pipe (PVC pipe) (exclusive of the rise section).

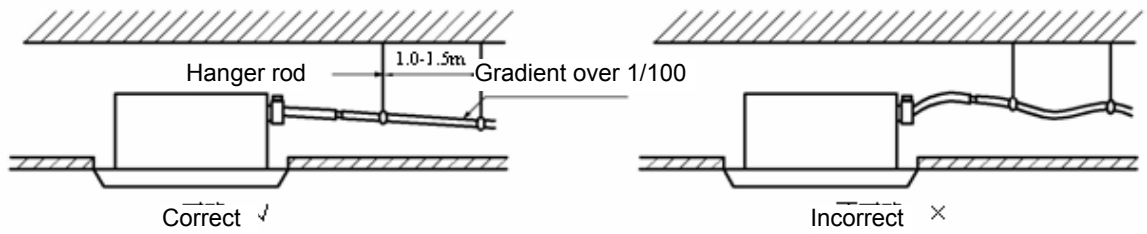
- The drainage pipe shall be short and has a down gradient of 1/100 at least, thus to avoid air bag.
- If the inclination of the drainage hose is insufficient, drainage rise pipe shall be mounted.
- The installing height of drainage rise pipe shall be less than 280mm.
- The drainage rise pipe shall be in right angle to the unit and the distance to the unit shall not exceed 300mm.



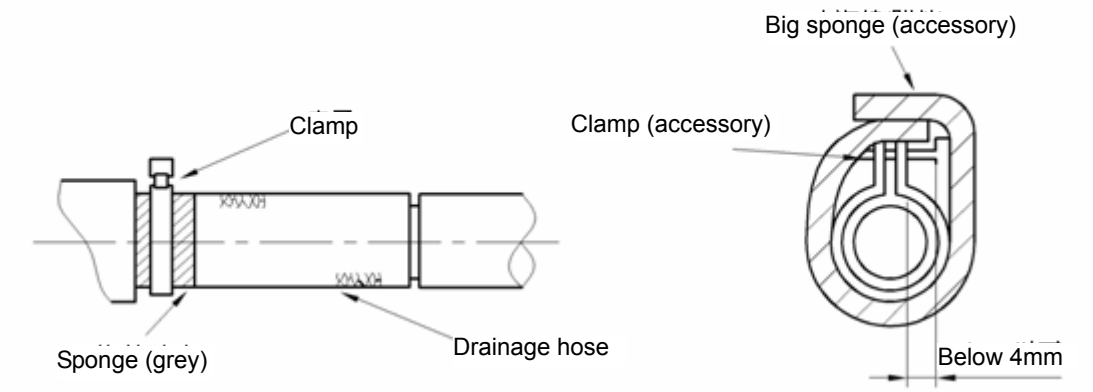
- The inclination of included drainage hose shall be within 75mm, so that the drainage insert will not bear excessive force.



- To prevent the drainage hose from dropping downward, hanger rods shall be erected every 1.0~1.5m.



- Use the included drainage hose and clamp. Insert the drainage hose to the drainage port and tighten the clamp.
- For thermal insulation, wrap the big sponge to the drainage hose clamp.
- The indoor drainage hose shall be thermally insulated.



- To connect the drainage pipes for multiple machines, please use the method of multi-pipe collection, as shown below.

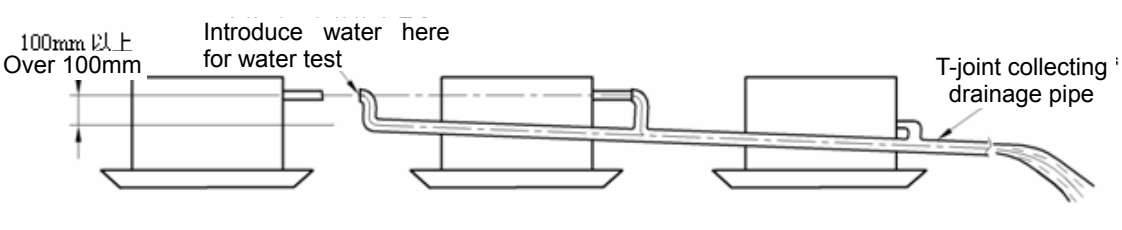


Fig. The specification of collecting drainage pipe shall be suitable to the working capacity of the unit

We may collect the drainage pipes of all the indoor units in one system (An outdoor unit and all the indoor units connected to this outdoor unit are called one system), or collect the drainage pipes of all the indoor units in several systems.

The ceiling height must be considered, and a specific gradient shall be ensured along the water flow direction. The cassette-type indoor unit is provided with water pump, and the maximum lift of its drainage pipe is 280mm.

- During installation, please take care that:

The diameter of drainage pipe connected to the indoor unit must meet the specifications. The pipe diameter shall not be too small; otherwise the water may overflow.

The main drainage pipe depends on the number of indoor units. Generally, it is required to be equal to or higher than ф35mm.

The drainage pipe shall be thermally insulated. The thickness of thermal insulation pipe must meet the requirements. The clearance between thermal insulation pipes shall be sealed with adhesive sticker.

Please discharge the water to the ground drain, water closet or any other place easy to drain the water out.

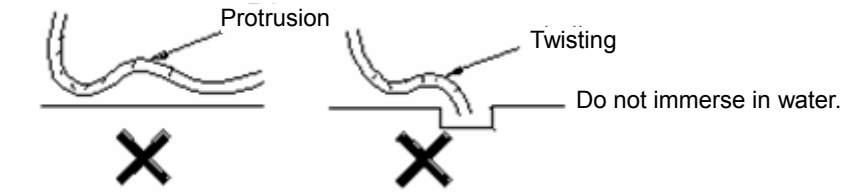
b) After installation, check if the drainage is smooth.

3) Wall-mounted Type

Assemble the drainage pipe as shown below and take measures to prevent condensing. Improper assembly of the drainage pipe may cause leakage, or even expose the furniture to moisture.

a) Assembly of drainage pipe

- To avoid air in water elbow, the drainage hose shall be kept as short as possible and inclined downward, as shown below.
- During connection, please use PVC pipe of equal size higher than this size (Nominal Dia,: 20mm; Outer Dia.: 26mm)
- The drainage pipe must be arranged in down inclination along water flow direction, thus to avoid air bubble blocking. Take care not to arrange the pipe in twisting, protrusion or waveform. Do not put the outlet of drainage pipe into water.



- The extended section of drainage hose shall be wrapped with thermal insulation sheath when passing the room.

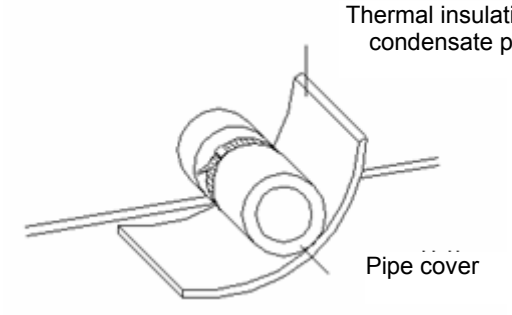
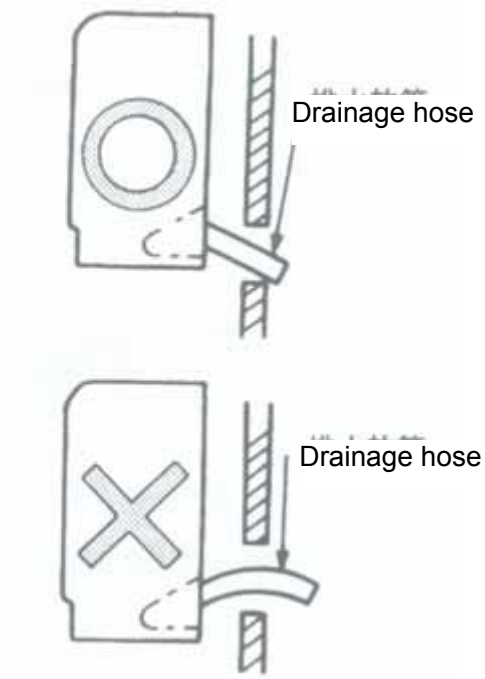


Fig.3.41

- After installation of the drainage pipe, be sure to make water test and check if the water can be drained smoothly.



b. After piping work, check if the draining flow is smooth.

12.3 Test for Condensate Pipe

The water test for condensate pipe includes closed water test and drainage test. The closed water test is focused on checking if the drainage pipe system is well sealed and if there is any leakage. The drainage test is focused on checking if the drainage pipe system can drain water smoothly and thoroughly and ensuring that there is no water deposit (except the specially designed water trap).

After connection of the drainage pipe is completed, firstly carry out closed water test. Seal the outlet of drainage pipe with adhesive tape or plug. Then, fill water into the drainage pipe system form indoor unit side. Stop filling after ensuring that all the drainage pipes are filled with water. After 24 hours, check all the joints of water pipe for any leakage. If any, repair and reinstall. If no leakage, proceed to drainage test.

Remove the adhesive tape or plug from the drainage pipe. Check the water tray and drainage pipe of indoor unit if the drainage is thorough and if there is any water deposit. If any, readjust it. If not, complete the water test and proceed to the thermal insulation on all pipe joints.

12.4 Requirements of Heat Preservation

- Heat Insulation Materials
  The thermal insulation material of obturator foam shall be used. Fireproof level: B1.
  The thermal conductivity shall not be higher than 0.035w/ (m·k) when the average temperature is 0℃.
- Thickness of thermal insulation layer
  The thickness of thermal insulation layer on condensate pipe shall be over 10mm.
- The joint of thermal insulation materials must be adhered by using special glue and then wrapped with plastic tape having a width not less than 5cm to avoid condensing.
- Thermal insulation is not required for the outdoor section of condensate pipe.

13 INSTALLATION OF WATER PIPELINE

13.1 Pipeline between Hydro-box and Water Tank

Preparation of Pipe: the PPR pipe with outer diameter dn25 which is S2.5 series (thickess is 4.2mm) is recommended.Hot-water pipes are applied as feed pipe for cooling water and outflow piep for hot water. The PPR pipe with outer diameter dn20 which is S2.5 series (thickess is 3.4mm) is recommended.All applied PPR pipes must comply with national standards GB/T18742.If other insulated pipeline are adopted, the above can be reference.

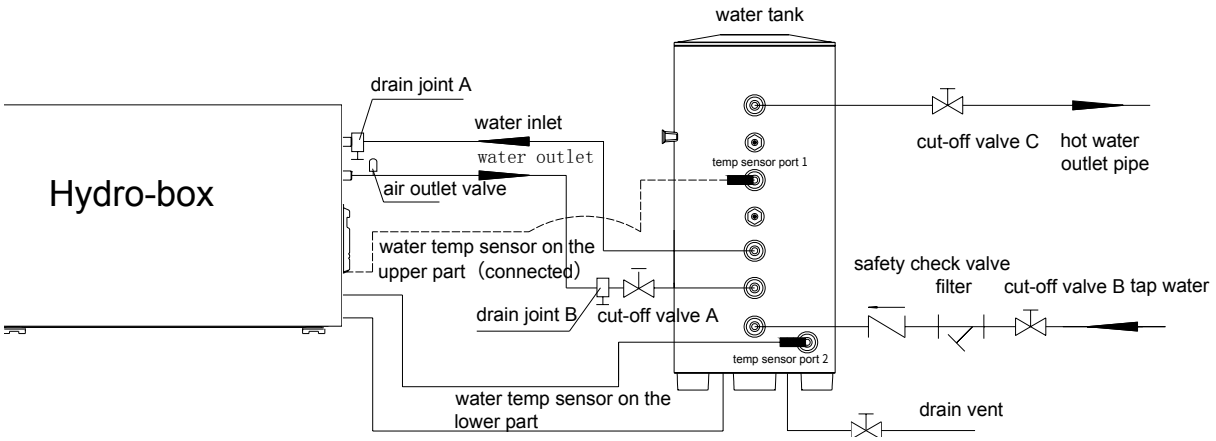
Installation of Circulating pipes: the water inlet of outdoor unit shall connect with outlet of circulating pipe of water tank while the water outlet of outdoor unit shall connect with the inlet of water tank. The auto air outlet valve shall be vertically installed upward in the water outlet of outdoor unit while the manual air outlet valve A shall be vertically installed downward in the water inlet of outdoor unit. The manual air outlet valve B must be vertically installed upward beside the inlet of circulating pipe of water tank.If the conditions are permitted, install the manual air outlet valve B in the place which is convenient for users. The three air outlet valves above are randomly equipped

Installation of Water Pipe of Water Tank: safety check valve,filter and cut-off valve must be installed in feed pipe according to the installation diagram of the unit(pay attention to the direction of safety check valve: "→" on the valve shall point at water tank). At least one cut-off valve shall be installed for outflow pipe.

Installation of Blowing Tube on the Bottom of the Water Tank: Connect the drain vent with the floor drain by PPR pipe. A cut-off valve must be installed in the blowing tube.

After all pipelines have been installed, execute leak detection.If there is no leakage, execute insulation work to all pipelines, especially to the valve and pipe joints. Insulating cotton whose thickness is not less than 15mm is recommended. After wrapping the pipe with insulating cotton, bundle the pipe, water temp sensor and wires.

Installation Diagram of the Unit



Note:

1. Only temp sensor in the bottom part is equipped in hydro-box and the temp sensor in the upper part is self-provided by water tank.
2. Connect temp sensor port 1 of water tank with the water temp sensor on the upper part of hydro-box.
3. Connect temp sensor port 2 of water tank with the water temp sensor on the lower part of hydro-box.
4. The connection method of upper temp sensor is mutual connection in the air.
5. If the water tank just has one temp sensor port, connect the temp sensor on the upper part of hydro-box with temp sensor port of water tank.

Specification

Name	Thread of Connecting Pipe
Circulating vents of hydro-box	G3/4
Cooling water inlet of water tank	G1/2
Circulating water inlet of water tank	G3/4
hot water outlet of water tank	G1/2
Pipe junction	G3/4

Caution:

1. The parts of actual line and imaginary line (except ground wire)of water tank with electric auxiliary heater shall be installed and connected. But only the part of actual line of water tank without electric auxiliary hearter need to be installed and connected.The difference between these two kinds of tanks can be recognized from their models and please refer to the explaination of water tank model.
2. Horizontal distance between water heater and water tank shall be within 5m and drop height shall be not exceed 3m. If such values are exceeds their specified range, please contact with us. The recommended installaion method is that the water tank is installed on the bottom while the water heater is on the top.
3. Please prepare materials according to the specifications above, PPR pipe is recommended if the cut-off valve is installed outside.
4. Only when the water heater has been fixed, the water pipeling can be installed. Keep the dust and other things away from the piping system.
5. Dependening on the pressure of tap water, water tank can provide hot water. Therefore, tap water is essential for using hot water.
6. Keep the cut-off valve of inlet of water tank open when using it.

13.2 Connecting Pipe between Outdoor Unit and Hydro-box

Connect outdoor unit with hydro-box by refrigerants piping

Model	Refrigerants Pipe	Diameter (mm)	Length ≤d（m）	Connection way
RQD5GA-K RQD8GA-K	Gas pipe	15.9	10	Negative Delta
	Liquid pipe	12.7	10	Negative Delta
RQ20LA-K RQ30LA-K RQD20LA-M RQD30LA-M	Gas pipe	19.05	10	Negative Delta
	Liquid pipe	15.9	10	Negative Delta

13.3 Connection Requirements of Hydro-box and Water Tank

Connect hydro-box with water tank by water pipe which can be galvanized pipe or seamless steel pipe,like PVC pipe, PPR pipe, etc.

Circulating Pipe	Joint Size（in）	Vertical Height≤d（m）	Connection Method
Inlet Pipe	3/4"	3	Threaded Connection
Outlet Pipe	3/4"	3	Threaded Connection

☆ If the vertical height is more than 5m, please contact us.

☆ Execute insulation work to circulating tube and the thickness of heat insulating material shall be not less than 10mm.

☆ Each joint of circulating tube shall be completely sealed.

13.4 Installation Requirements of Water Pipeline

☆ Cooling water inlet of water tank connects tap water pipe and hot water outlet connects the terminal water outlet.

☆ One-way valve, filter and pressure relief valve shall be installed in the inlet of tap water.

☆ Manual cut-off valve shall be installed in water inlet or outlet for conveniency of servicing.

☆ Air outlet valve shall be installed on the highest position of the water pipe.

☆ If there are a few of terminal water outlets which are also far away from the water tank, please add return water pipe to prevent users from waiting long for hot water.

14 ELECTRICAL INSTALLATION

14.1 Precautions for Electrical Installation

Itemized Description of Cautions.

The electrical installation must be done by professional electricians.

The electrical installation must be done in accordance with applicable technical codes and other rules.

⚠ WARNING! Please make sure to install earth leakage circuit breaker. Earth leakage circuit breaker must be installed to prevent electric shock or fire.

CAUTIONS!
The air conditioner must be securely earthed. Incorrect earthing may cause electric shock or fire.

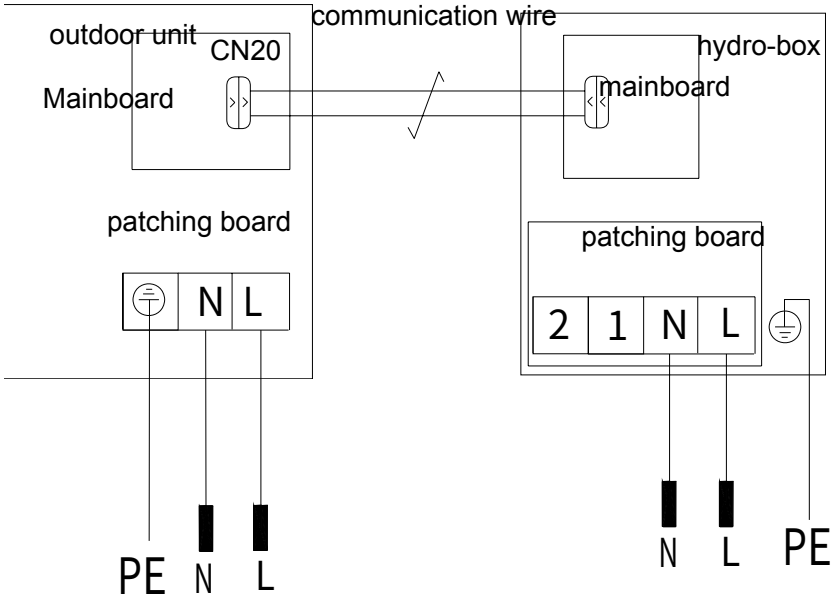
- All the electric installations must be carried out by specialist technicians in accordance with the local laws, rules and these instructions.
- The indoor unit and outdoor unit shall use different power supplies. The indoor units under the same system must be powered by a unified power source. All the indoor units can only be controlled by one master power switch. Rated supply voltage and special circuit for air conditioner must be used.
- The earthing shall be secure. The earthing wire shall be connected to the special earthing device on the construction. The installation must be done by specialist technicians. Never connect the earth lead to the gas pipe, water pipe, lightening rod or telephone earth wire.
- To avoid electric shock or any accident due to mal-operation, the air switch and shock-resistant earth leakage circuit breaker that can cut off the power supply of the complete system must be installed. The air switch shall have both the magnetic tripping and thermal tripping functions to ensure protection against the short circuit and overload. Electric shock or fire might be caused if no installation of earth leakage circuit breaker. Do not switch on the power before completion of the electrical work. Make sure to cut off the power supply before repair.
- In no case should the capacitor be used to improve the power factor.
- Please use cable conduit for power cords.
- Do not lay the electronic control cables (remote control and signal line) outside the machine with other cables; otherwise the machine might become malfunctioned or failed due to electrical noise.
- The power cord must be always connected to the power cord terminal board, and fixed by using the lock connector included with the machine. Meanwhile, prevent them from contacting the fitting pipe. The diameter of power cords shall be large enough. See below for the detailed specifications. The damaged power cords and connection lines must be replaced with the designated cables. When connecting the cable, please confirm that all the electrical components inside the electric box shall have no coupling or terminal loosened. (Improper installation of electric box cover may lead to potential water leakage, which will cause the unit abnormal or short circuit).
- Earth lead must be connected before connecting the power cord. An earth lead longer than the power cord shall be provided.
- For site wiring, please refer to the circuit diagram attached on the machine body.

14.2 Specifications of power cord & circuit breaker

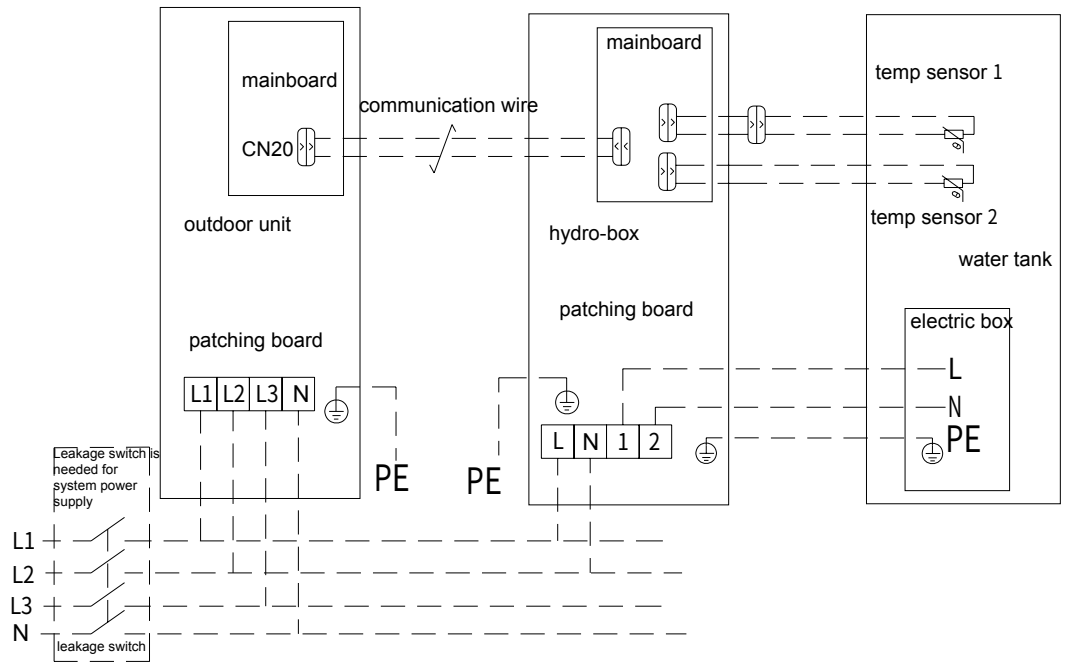
Model	Power supply (V,Ph,Hz)	Capability of circuit breaker (A)	Min. sectional area of earth lead (mm^2)	Min. sectional area of power cord (mm^2)
GMV-Pds100W/Na-K	220V~ 50HZ	32A	1×6.0	2×6.0
GMV-Pds120W/Na-K	220V~ 50HZ	32A	1×6.0	2×6.0
GMV-Pds140W/Na-K	220V~ 50HZ	40A	1×10.0	2×10.0
GMV-Pds160W/Na-K	220V~ 50HZ	40A	1×10.0	2×10.0
GMV-Pds224W/Na-M	380V~ 50HZ	32A	1×6.0	4×6.0
GMV-Pds280W/Na-M	380V~ 50HZ	32A	1×6.0	4×6.0

14.3 Wiring Sketch Map

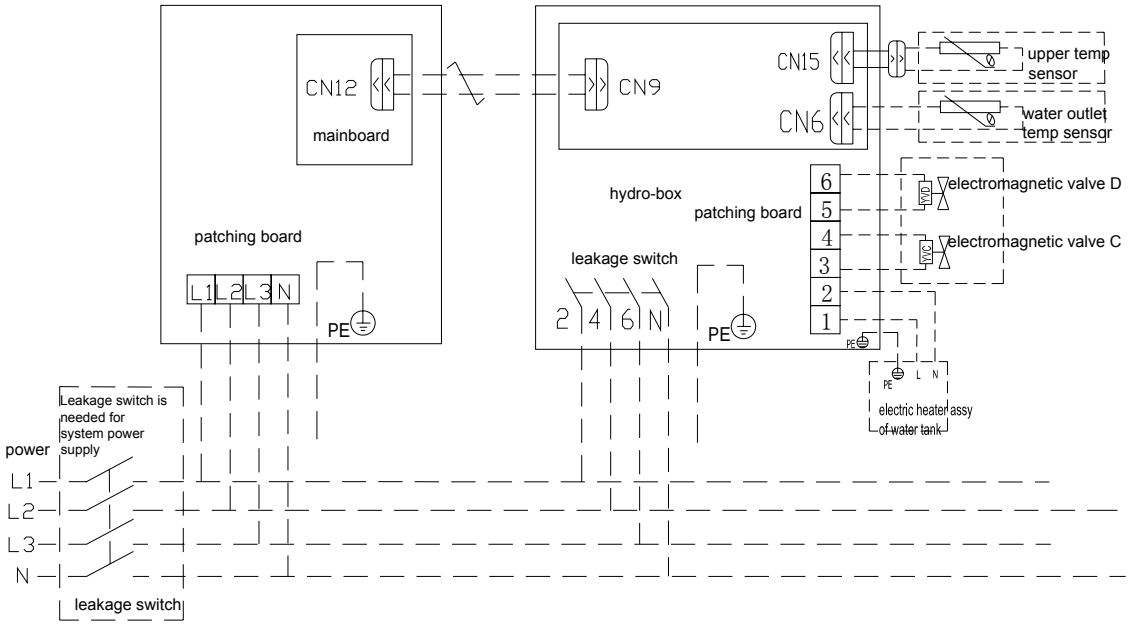
14.3.1 Connections among Outdoor Unit, Power of Hydro-box and Communication Wire



Connection Diagram RQD5GA.RQD8GA



Connection Diagram of Outdoor Unit, Hydro-box and Water Tank （RQ20LA.RQ30LA）

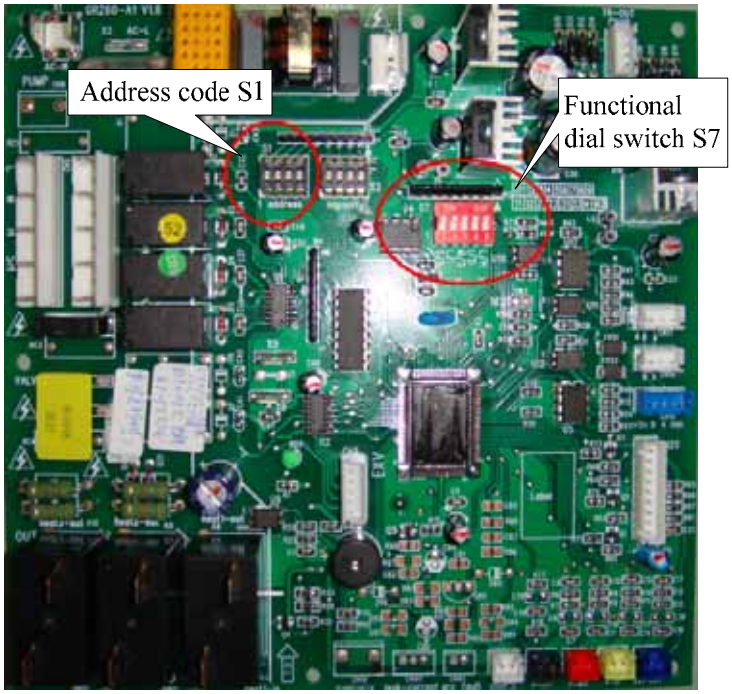


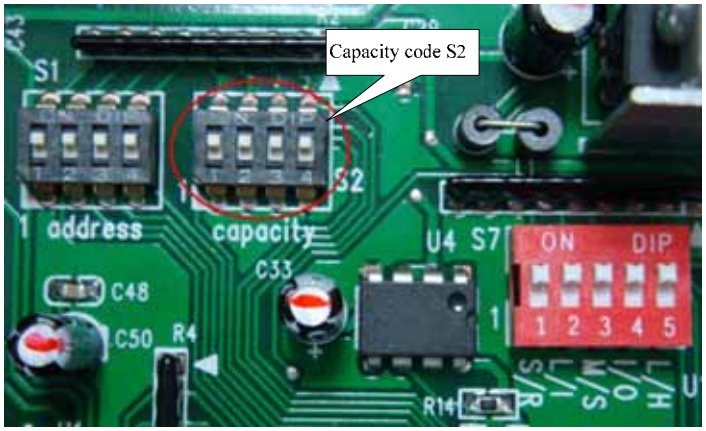
Connection Diagram of Outdoor Unit, Hydro-box and Water Tank（RQD20LA.RQD30LA）

14.4 Dial-up of Unit

The indoor unit is provided with three dial-up, i.e. address dial-up, capacity dial-up and function dial-up. Among them, the address dial-up and function dial-up shall be set on installation site.

The duct-type unit is taken as example to illustrate the position of three dial-up:





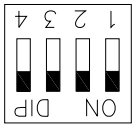
14.4.1 Dial-up of indoor unit mainboard and wire remote controller

1)Address code

Address dial-up must be set for the multi indoor units; otherwise the abnormal communication will be caused to the unit. The address code has 4-bit dial-up in total. The highest address is 16 and the lowest address is 1

⚠**NOTES! To use multiple indoor units in parallel, make sure to change the setting of address code before installation and guarantee that the address code of each indoor unit must be different (The address code is located on the mainboard of indoor unit). If wired controller is used, make sure to dial the address code of wired controller to the position same as the address code on corresponding indoor unit. (The address code of wired controller is located on the back of wired controller)**

☆ Below is factory default setting:



Address

The default setting of address dial-up code is 0000 and the address is 1 (See above for the position of dial lever).

☆ Dial-up Value

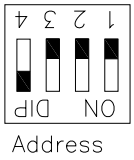
The dial-up value of address code is set in binary system. The dial-up value is “0” when the lever is dialed to “ON” end; the dial-up is “1” when the lever is dialed to numerical end on opposite side. For number 4~1 on the address code, the dial-up #4 refers to high bit and the dial-up 1# refers to low bit.

Dial-up table(dial-up switch with 4 bit)				
Bit 4	Bit 3	Bit 2	Bit 1	Address
0	0	0	0	1
0	0	0	1	2
0	0	1	0	3
0	0	1	1	4
0	1	0	0	5
0	1	0	1	6
0	1	1	0	7
0	1	1	1	8
1	0	0	0	9
1	0	0	1	10
1	0	1	0	11
1	0	1	1	12
1	1	0	0	13
1	1	0	1	14
1	1	1	0	15
1	1	1	1	16

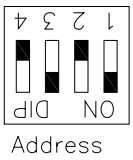
Example 1: If the dial value is “0111”, this represents that the address is “8”, the pins 1, 2 & 3 of the dial switch are dialed to the numerical end, and the pin 4 is dialed to “ON”.

Example 2: If the dial value is “1010”, this represents that the address is “11”, the pins 2 & 4 of the dial switch are dialed to the numerical end, and the pin 1 & 3 are dialed to “ON”.

See below:



Address 8, dial-up value 0111

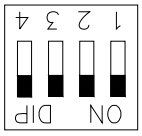


Address 11, dial-up value 1010

2)Address code about capacity

On the mainboard of indoor unit, two 4-bit DIP switches are used to distribute the address and capacity of indoor units. The 4-bit DIP switch (marked with “capacity” below) used for setting the capacity of indoor units is factory set before shipment of indoor unit, while it is covered by sealant, so that it cannot be changed by the user.

☆ Below is factory default setting:



Capacity

The default Capacity dial-up is the maximum capacity of indoor unit. As shown above, the capacity is (See above for the lever position)

☆ Dial-up Value

The dial-up value of capacity code is set in binary system. The dial-up value is “0” when the lever is dialed to “ON” end; the dial-up is “1” when the lever is dialed to numerical end on opposite side. For number 4~1 on the capacity code, the dial-up #4 refers to high bit and the dial-up 1# refers to low bit.

Dial-up Table (4-bit Dial-up Switch)				
Bit 4	Bit 3	Bit 2	Bit 1	Capacity:
0	0	0	0	20
0	0	0	1	25
0	0	1	0	30
0	0	1	1	35
0	1	0	0	40
0	1	0	1	45
0	1	1	0	50
0	1	1	1	60
1	0	0	0	224
1	0	0	1	70
1	0	1	0	80
1	0	1	1	90
1	1	0	0	100
1	1	0	1	112
1	1	1	0	140
1	1	1	1	280

3)Functional dial switch S7

Functional dial switch S7			
Dial-up Switch	Functional Description:	Dial-up Setting	
		0 (ON Position)	1
1(S / R)	Setting of memory mode	Standby (S)	Restore (R)
2(L / I)	Setting of control mode	Wired control (L)	Remote control (I)
3(M / S)	Setting of master / slave indoor unit	Master indoor unit (M)	Slave indoor unit (S)
4(I / O)	Setting of ambient temperature acquisition point	Air inlet (I)	Receiver (O)
5(L / H)	Setting of high / low static pressure fan	Low static pressure (L)	High static(H)

Functional description of function dial-up:

Dial-up switch 1 (S/R): Setting of memory mode, including the standby mode and restoration mode. The standby mode refers to that the previous parameters will be kept but the unit will not run automatically after the power supply is resumed. This setting is factory defaulted (dial-up switch pulled to “ON” position). For example, if the parameters of an indoor unit set before power shutdown are High Fan and 24°C, the unit will be under standby state after the power supply is resumed and after the unit is manually started, the parameters will remain as High Fan and 24°C. The restoration mode refers to that not only the previous parameters will be kept, but also that the unit can start automatically after the power supply is resumed. But if the unit is under STOP state before power shutdown, it will be also under STOP state after the power supply is resumed.

Dial-up switch 2 (L/I): Setting of control mode, including wired control and remote control. The wired control mode refers to that the indoor unit is controlled from wired controller (hand controller). This setting is factory defaulted (dial-up switch pulled to “ON” position). When the setting is wired control mode, the function dial-up on S7 for “setting of memory mode” and “setting of master / slave indoor unit” will be disabled. These two settings can be done from the wired controller directly. The remote control mode refers to that the indoor unit is controlled from remote controller. When the setting is remote control mode, its function dial-up must be set on S7.

Dial-up switch 3 (M/S): The setting of master / slave indoor unit refers to the master / slave setting of indoor run mode, mainly used to meet the needs of special people on priority (e.g. leader, patients, etc). The factory default setting is that all indoor units are master (dial-up switch pulled to “ON” position).

When all the indoor units are set as slave, the outdoor unit will run according to the mode of slave indoor unit that is firstly started. If the mode of slave indoor unit started later has in conflict against the mode started earlier, the system will display mode conflict error, so that the indoor unit started later cannot work. In this case, the run mode of the unit is decided by the slave indoor unit that is firstly started.

When only one indoor unit is set as master, no matter if the master indoor unit is firstly started or not, the slave indoor unit will give out mode conflict error as long as its mode is in conflict against the mode of master indoor unit (except that the master indoor unit is stopped). In this case, the unit run according to the mode of master indoor unit on priority.

When several indoor units are set as master, the mode of master indoor unit with a lower address code will be taken as the master run mode of the unit. when the master indoor unit with the lowest address code is changed from STOP state to RUN state, the mode of other master indoor units or slave indoor units shall be kept identical to its mode; otherwise the system will give out mode conflict error. Therefore, when there are several master indoor units, the address code of the unit shall be set from lower to higher according to priority level.

Dial-up switch 4 (I/O): Setting of ambient temperature acquisition point. This setting is mainly used when the temperature of air conditioner area differs largely from the air inlet temperature of the unit. Meanwhile, this setting is only valid when the receiver is connected, including the setting of temperature acquisition point at air inlet and setting of the temperature acquisition point at receiver head. The factory default setting is acquisition of air inlet temperature (dial-up switch pulled to “ON” position).

Dial-up switch 5 (L/H): Setting of high / low static pressure fan. This setting includes the setting of high static pressure fan and low static pressure fan, adjusted as needed for the project. The factory default setting is low static pressure fan (dial-up switch pulled to “ON” position).

Cautions:

1)The above settings must be done under power shutdown state.

2)The dial-up switch of function code is classified into 3-bit code, 4-bit code and 5-bit code. The 4-bit code or 5-bit code is used for duct-type unit only (including multi duct-type unit and 1-to-1 duct-type unit).

3)When the “setting of control mode” is “L”, the function dial-up for “setting of memory mode" and “setting of master / slave indoor unit” will be disabled. When the “setting of control mode” is “I”, this function dial-up setting is enabled.

4)The dial-up switch shall be put to position correctly, and shall not be put to middle position. Dialing of the switch to “ON” position indicates “0” and the dialing to opposite direction indicates “1”.

5)After dialing up, please mark the address code of the unit(√)

Definition of Heating Capacity of Water Tank

Heating capacity of water tank is decided by the setting on wired controller of hydro-box which is based on the model of water tank and can’t exceed heat exchange capacity of Tube in tube of hydro-box. The different settings mean different output capabilities. Default setting corresponds to output capability of max. water yield.

Rated heating capacity of water tank coil is default value of capacity of cap jumper(kW)	Setting on wired controller of water tank	Rated heating capacity of water tank coil is default value of capacity of cap jumper(kW)	Setting on wired controller of water tank
5	5	40	40
8	8	45	45
12	12	reserved	reserved
15	15	reserved	reserved
20	20	reserved	reserved
25	25	reserved	reserved
30	30	reserved	reserved
35	35	reserved	reserved
Note: when setting the value above on wired controller, the options will be displayed circularly and its unit is KW.			

14.4.2 Setting of Capacity of Outdoor Unit

The setting of capacity of outdoor unit is determined by the cap jumper of outdoor unit. Different cap jumpers represent different capacities of water tank as shown in the table below:

Rated Capacity of Outdoor Unit	No. of Cap Jumper
100	No.9 Cap Jumper
120	No.8 Cap Jumper
140	No.7 Cap Jumper
160	No.11 Cap Jumper

15 DEBUGGING OF THE UNIT

15.1 Preparation for the Debugging

15.1.1 Preparation of Tools and Equipments

a. Please confirm if the tools below have been prepared.

Inner hexagon spanner	Heat indicator
Adjustable wrench	Noise-monitoring equipment
Phillips screwdriver	Split-core type meter
Slotted screwdriver	Digital universal meter
Vacuum pump	Electric instrument
Electronic scale	Timing counter
Manometer of corresponding refrigerants system	Double ladder
Anemoscope	Debugger and data cable

b. Please check if the testing software is correct before debugging.

c. Please check if all files and parameters which are required are complete.

15.1.2 Inspection of Cooling System

Please confirm if the cut-off valve of outdoor unit is in the state of max. opening angle and if the control wire of electric expansion valve reliably connects with mainboard of indoor unit.

15.1.3 Inspection of Electric System

15.1.3.1 If there is any strong electromagnetic interference, mill dust or acid/alkaline gas around the unit.

a. The power-supply system can't work with the equipment with inverter or be close to the equipment which can produce strong electromagnetic interference in case the unit can't work normally.

b. Prevent acid/alkalaine gas or liquid from cauterizing cable of the unit.

15.1.3.2 Power Capacity of the Unit

Due to the working current of the unit is varied under different conditions which is much more than the rated current, the voltage may be unstable and capacity factor of the circuit may decrease, the power capacity shall be 1.5-1.8 times of rated power, or the compressor may not be started and the unit can't work normally.

15.1.3.3 The Selections for Air Switch and Fuse-link

a. Regarding the commercial air conditioner, the independent air switch, fuse-link and other protective components shall be installed and the selection and use of them shall be proper.

Remarks:

a1. Air switch can be protections of overloading and short circuit. Its breaking capacity is not so good as fuse-link，neither is its reaction speed. However, it can be reset manually after operation.

a2.Fuse-link just can be the protection of short circuit, and its breaking capacity and reaction speed are good but its fuse shall be replaced after operation.

b. It is advised that customer shall select air switch according to the rated current of the unit. Usualy, the current value of air switch shall be approximately 2.25 times as the rated current of the complete unit. Rated current of fuse-link shall be 1.5 ~ 2 times as that of the unit.

15.1.3.4 Inspection of Components inside the Electric Box (under supply interruption)

Inspect if there is any component broken off during transportation by eye. Then, check if there is any loose component or wiring by hand. For huge unit, screw the terminals of patching board and wiring by screwdriver or sleeve. Screw them again after 2 months' normal running. Auxiliary contact of AC contactor can't be removed which has been debugged in factory.

15.1.3.5 Cautions of Laying Power Circuit

The power circuit of small unit shall be laid by trunking or flame-retarded PVC pipe and the power cord of

huge unit shall be laid by cable tray, both of which shall not be exposed to sunshine or rain.

a. Selection of Cable :

Type: rubber, PVC

Line Width: According to the length of the cable and its model, confirm the width of the cable.

b. Ground Wire of the Unit

The unit shall be reliably earthed for safety and earthing device can't withstand mechanical pulling force. Standard of ground wire width:

S：Sectional Area of Ground Wire D： Sectional Area of Power Cord

S=D D<=16

S=D/2 D>16

15.1.4 Inspection of Communication System

Before debugging, check if the communication between indoor units and between indoor unit and outdoor unit have been connected. Check if the address code of each indoor unit is the same as the assigned address.

The communication wire can't in the same trunking with the power cord and it shall be independently laid by flame-retarded hard PVC pipe. The horizontal spacing between communication wire and strong current wire shall be more than 20cm.

Note: make sure that the unit has been energized for 8 hours or above before debugging or the compressor will be damaged. The debugging shall be executed by or under guidance of the professional.

15.1.5 Inspection of Water System

1. Check if the piping of water system is proper；
2. Check if the circulating pipes are insulated.
3. Check if the check valve and the protection valve of water inlet are installed correctly.
4. Check if the air inside the pipeline of water stystem has been drained. Check if the air outlet valve and blow down valve are closed；
5. The pressure of feeding water shall not be less than 0.15MPa；
6. Check if the appearance of the unit and pipe system are damaged during transportation.
7. Check if all valves in system have been opened.

15.2 Debugging of Cooling Mode

Due to the characteristics of VRF unit, the debugging of the system shall distinguish the max. capcity of indoor unit from min. indoor unit.

Before first startup of compressor, make sure that the unit has been energized and the compressor has been preheated for 8 hours or above. When the unit has been energized, firstly confirm if the communication of the system is normal , if the data of all indoor units and wired controllers can be viewed in monitoring software and if there is any repeated code. If the communication is normal, record the data of sheet 1 and then, execute the running of indoor unit with max. capacity. During this course, observe and judge if each parameter is normal. If not, find the cause and solve the problem. Redebug it after the problem has been solved. If the running of system is normal, record the parameter after 30min and execute the debugging of indoor unit with min. capacity subsequently. The course can refer to that of min. capacity running.

The course can refer to that of min. capacity running.

Note: During the debugging, pay attention to the sound of outdoor fan and of running of the compressor.

15.3 Debugging of Heating Mode

If the environmental conditions are proper, heating mode can be turned to immediately after the debugging of cooling mode has been finished. And also, the debugging shall distinguish the max. capcity of indoor unit from min. indoor unit.

Note: If the environmental conditions can't meet the requirements of cooling mode, the debugging of heating

mode can be executed immediately.

When the debugging has been finished, record the data and make a report to users.

15.4 Debugging of Water Heating

15.4.1 Preparation before Debugging

1. Check if the unit has been installed correctly.
2. Check if the piping of water system and the wiring of electric system are proper.
3. Check if the circulating pipe is thermal insulated
4. Check if the ground wire has been connected.
5. Check if the voltage is the rated voltage of the unit.
6. Check if the check valve and safety valve of water inlet are installed correctly.
7. Check if the air in pipeline has been exhausted and if the air outlet valve and blown down valve have been closed.
8. The pressure of feeding water can't be less than 0.15MPa;

15.4.2 Air Discharge inside the Pipeline

a. If the air outlet valve A in hydro-box can be easily operated:

1. Make sure that all pipes have been connected, air outlet valve and side hydrovalve have been closed and blow-off vent has been sealed.
2. Open the ball valve for water replenishing to fill water and open the side hydrovalve.
3. If there is tap water that is outpouring, close the side hydrovalve and open air outlet A.
4. If just water flows out from the air outlet A, energize the hydro-box and press the buttons "mode" ＋ "▼" at the same time to start the water pump. In 2 min later, press these two buttons again to close the water pump. Then, close the air outlet valve and the air discharge has been finished. Open the hydrovalve to let water flow out for 1~2min and then close it to execute the debugging of the complete unit.

   Synchronously press "Mode" and "▼" for 5s to start clean mode

b. If the air outlet valve B in hydro-box can be easily operated:

1. Make sure that all pipes have been connected, air outlet valve and side hydrovalve have been closed and blow-off vent has been sealed.
2. Open the ball valve for water replenishing to fill water and open the side hydrovalve.
3. If there is tap water that is outpouring, close the side hydrovalve and open air outlet B.
4. If just water flows out from the air outlet B, open chack valve A, energize the hydro-box and press the buttons "mode" ＋ "▼" at the same time to start the water pump. In 2 min later, press these two buttons again to close the water pump. Then, close the air outlet valve and the air discharge has been finished. Open the hydrovalve to let water flow out for 1~2min and then close it to execute the debugging of the complete unit.

15.4.3 Debugging of Water Heating

Set the temp of water heating as 50℃ and record the data after 30min running of water heating.

If there is any malfunction that occurs during the running, such as temp sensor error, water flow switcherror and fall-off of water temp sensor, please make sure that the temp sensors have been installed correctly and then, make sure that the air has been completely discharged from the pipeline.

MAINTENANCE

MAINTENANCE

1 PURPOSE

In order to guarantee the working life and reliable running of the unit and decrease the the failure rate, please execute the cleanout and maintenance periodically.

2 ROUTINE WORK

2.1 Cleanout of the Water System

If the water system has been used for long time, there may be scale deposit on pipeline so it shall be cleaned. Or, the defect of heat exchange, bad heating effect, blockage of the pipeline or damage to the unit may be caused. It is suggested to clean the water system every 6~12 months

① Energize the unit, and press the button “Temp Setting” for 5s to enter the interface of user parameter setting.Choose 01 to start the function of “ Directly-heated Clean”to feed water into the water tank. When the water level of the water tank is about 50mm higher than the outlet of circulating water (circulating pipe of the unit), press the press the button “Temp Setting” for 5s to enter the interface of user parameter setting.Choose 01 to turn off the function of “ Directly-heated Clean”.

② Add cleanser into water tank in properticn.

③ After adding cleanser, press the “temp setting” for 5s to enter the interface of user parameter setting. Choose 06 to start the function of “ Circulated Clean”. After circulated cleaning has been running for 30min, it will stop automatically. If it is expected to be turned off within 30min, press “ temp setting” for 5s to enter the interface of user parameter setting. Then, choose 06 to turn off the function of “ Circulated Clean”.

④ Drain the water with cleanser and then,clean the cleanser which may stay inside the pipeline and the unit by the ways mentioned above.

2.2 The Cleanout of Finned Heat Exchanger

For better heat exchange, the finned heat exchanger is usually placed outdoors. After a period of time, the fins will be blocked, which will affect the heat exchange of the condensator and increase the energy consumption.Therefore, the finned heat exchanger shall be cleaned every 6-12 months. But if there is a great of pollution, such period shall be shortened.

Clean Method:

① Cut off the power supply.

② Wash the fins repeatedly from the opposite direction of inlet of heat exchanger by pressure gas. Wash it vertically with the fins to prevent them from collapse.

③ It can be washed by high pressure water but the pressure shall be well controlled. And also, protect the fin from collapse and the electric components. If there is any oily substance, wash it with water which contains cleanser.

④ It can also be washed by dust-collector and brush.

⑤ Keep washing it until the original color of the fin can be seen or the water which drops from the fin is clear water.

2.3 Daily Maintenance

① Don’t put any thing on the unit and its accessories. Keep the surroundings dry and clean as well as good ventilation. Clean the condensator in time when there is heavy dust on it.

② Periodically (once every week) clean the filter of the water system to avoid blockage of the system. Frequently check if the water replenishing device of the water system is normal.

3 ANTI-FREEZING PROJECT IN WINTER

3.1 Cautions of Water System

Don’t place it in the extremely cold environment,or the environment where the ice is easily freezen

Don’t installed it in a place which can’t drain water. Blow-off pipe shall be connected with sewer.

Water tank shall be installed in the place which is convenient for use and maintenance and has floor drain.

The water tank shall be installed in the place to which the children can’t easily get.

The water tank shall be installed close to the terminal water outlet as much as possible to avoid long pipeline of hot water which will cause heat loss.

The water tank shall also be installed close to the outdoor unit as much as possible.

The power switch of water heater shall be installed in the place which is away from the water.It’s better to assemble water-proof box.

In low temperature of winter or if the unit hasn’t been started for long time, energize the unit for 8 hours at least before turning on the unit.

In low temperature of winter, the power can’t be cut off after the unit stops or the protection of anti-freezing will not work.

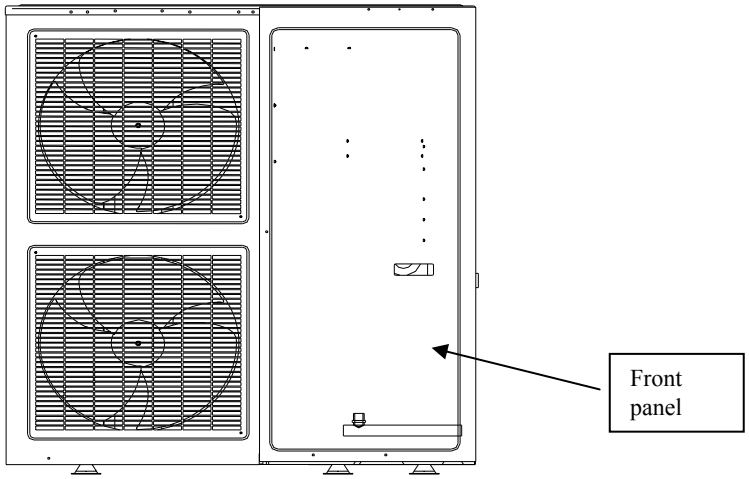
If the unit will not be used for long time, drain the water inside the unit, water tank and pipeline through draw off valve after turning off the power of the unit. Drain steps are as follows: Close the ball valve for water replenishing of water tank, open the terminal hydrovalve and open the drain of water tank.Then, open draw off valve A or B which is on the pipeline between the outdoor unit and the water tank and wait until there is no water flowing out. Close all valves and drain. If user need to add water and start the unit, please refer to the instruction of 3.2.2.

The operations above of different models may be slightly different, so the installation manual of product is the standard.

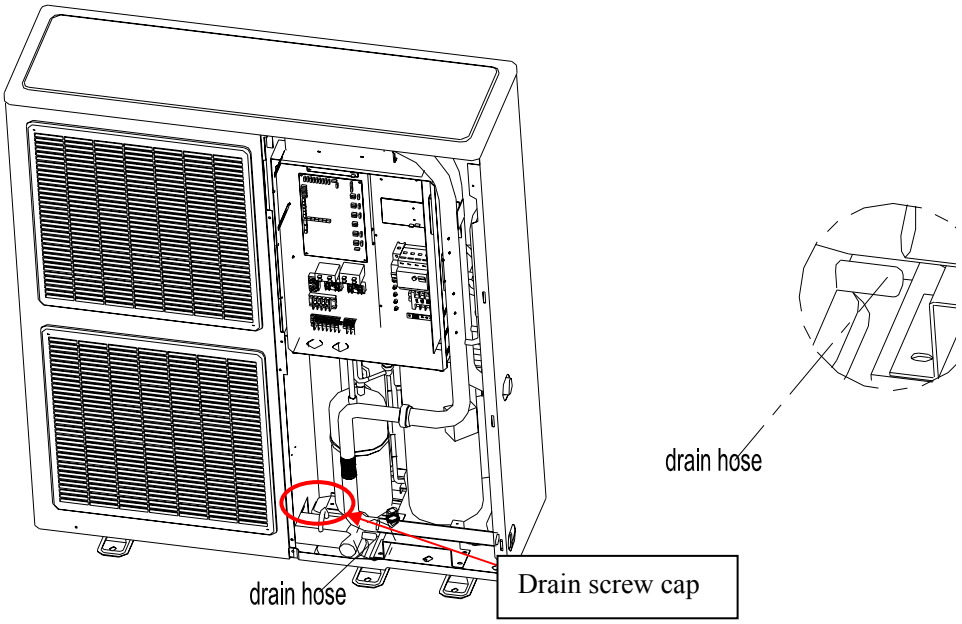
3.2 Cautions of Outdoor Unit

If it is installed in an environment where the temperature is below the 0℃, and the system stands by (power on), the control system will make anti-freezing run, start the water pump and compressor unitl the temp of water reaches the safe point so that the water system won’t be iced to damage the equipment. If it will not be used for long time, drain water of water system to prevent the equipment from damage due to the water iced.

Drain operation of the unit



1）Disassemble the front panel of outdoor unit



2）There is a drain on side Tube in tube which is on lower part of the front. Unscrew the cap of the drain to drain water.

SERVICING

SERVICING

1 LIST OF UNIT ERRORS

1.1 List of Error Display on Wired Controller

Error Code	Error Description	Source of Error Signal	Notes on Control
E1	Compressor high-pressure protection	High-pressure Switch	The high pressure protection value is 4.2MPa. When it is detected three times successively that a compressor is under high pressure, this compressor will be stopped. In this case, error code E1 will be displayed and the run indicator will blink.
E2	Indoor antifreeze protection	Evaporator sensor	When it is detected for 10 minutes successively that $T_{evap.}$ is ≤-2°C (varying with indoor unit), the antifreeze protection will be activated, in which case the outdoor unit will immediately shut off the indoor electronic expansion valve and the capacity will be set to “0”.
E3	Compressor low-pressure protection	Low-pressure Switch	When the low pressure reaches the protection value (absolute pressure: 0.15MPa), the low pressure switch will be cut off, in which case the low pressure protection will be displayed.
E4	Compressor exhaust temperature protection	Exhaust temperature sensor	When the exhaust temperature ($T_{exhau.}$) is equal to and higher than 113°C, the compressor will be stopped. Upon the first occurrence of exhaust protection, the error code E4 will be displayed. When the exhaust temperature is lower than TR°C, the compressor will resume to operation after it has been stopped for 3 minutes. The compressor can resume to operation for the first two times. But if this occurs three times successively in 1 hour, the unit must be disconnected from power supply before it can restarted.
E5	Frequency converter overcurrent protection	Compressor drive	The drive board of variable frequency compressor is incurred to error. For details on the error message, please refer to the Display Code on Digital Tube of Outdoor Unit.
E6	Communication error	Communication	The mainboard of indoor unit or the wired control is incurred to communication error with outdoor unit. The indoor unit incurred to communication error will be stopped and display the error code.
E7	Mode conflict	User operation	The run mode of the unit that is started later is inconsistent to the mode that is started earlier. Only the cooling and dry mode has possible mode conflict against the heat mode. For fan mode, there is no mode conflict against the cooling, dry or heat mode. In case mode conflict occurs, the indoor unit with mode conflict will display E7 and be stopped.
E9	Water-full protection	Water pump	When water full is detected for 8 seconds successively, the system will enter into water-full protection state, in which case the wired controller will display E9 and give out alarm. In case of water-full protection under each mode, the other loads of the indoor unit will be stopped, except that the water pump will remain working and give out alarm. In this case, the outdoor unit shall adjust the capacity output accordingly
F0	Indoor ambient temperature sensor error	Indoor room sensor	The indoor unit incurred to sensor error will display error code and be stopped.
F1	Indoor coil inlet temperature sensor error	Indoor coil-inlet temperature sensor	The indoor unit incurred to sensor error will display error code and be stopped.
F2	Indoor coil middle temperature sensor error	Indoor coil-middle temperature sensor	The indoor unit incurred to sensor error will display error code and be stopped.
F3	Outdoor coil inlet temperature sensor error	Indoor coil-exit temperature sensor	The indoor unit incurred to sensor error will display error code and be stopped.

F4	Outdoor ambient temperature sensor error	Outdoor environment sensor	Test for 30 seconds successively to check if the temperature sensor is disconnected. If yes, alarm will be sent; otherwise no processing will be made. If the controller of outdoor unit detects failure of outdoor sensor under open circuit, short circuit and excess of test value, the outdoor unit will execute the following default actions, that is, the error message will be sent to each indoor unit and the error code will be displayed via error indicator or wired controller. When the outdoor ambient temperature is lower than -5℃, the disconnection failure of outdoor inlet, middle and exit sensors in shield room will be processed as under -30℃.
F7	Outdoor defrost temperature sensor error	Outdoor Defrost Sensor	Test for 30 seconds successively to check if the temperature sensor is disconnected. If yes, alarm will be sent; otherwise no processing will be made. If the controller of outdoor unit detects failure of outdoor sensor under open circuit, short circuit and excess of test value, the outdoor unit will execute the following default actions, that is, the error message will be sent to each indoor unit and the error code will be displayed via error indicator or wired controller. When the outdoor ambient temperature is lower than -5℃, the disconnection failure of outdoor inlet, middle and exit sensors in shield room will be processed as under -30℃.
F9	Exhaust temperature sensor error	Exhaust temperature sensor	Test for 30 seconds successively to check if the temperature sensor is disconnected. If yes, alarm will be sent; otherwise no processing will be made. If the controller of outdoor unit detects failure of outdoor sensor under open circuit, short circuit and excess of test value, the outdoor unit will execute the following default actions, that is, the error message will be sent to each indoor unit and the error code will be displayed via error indicator or wired controller. When the outdoor ambient temperature is lower than -5℃, the disconnection failure of outdoor inlet, middle and exit sensors in shield room will be processed as under -30℃.

Error Code of Hydro Unit

Error Code	Error
C5	Jumper error
E6	Communication error
F9	Outlet water temperature sensor error
F8	Inlet water temperature sensor error
FL	Water temperature sensor error
L7	Current switch error/lack water protecting
EH	Floor auxiliary heater felt protecting
LP	Outdoor unit board and Hydro unit board are not matching

Error Code of Duct-type Unit

Error	Error Code	Error	Error Code
Prevention against low temperature	E2	Error with oil temperature sensor 2 (digital)	Fb
Outdoor ambient temperature sensor error	F4	Indoor ambient temperature sensor error	F0
Indoor tube-inlet sensor error	F5	Exhaust overtemperature	E4
Outdoor tube-middle sensor error	F6	Low-pressure protection	E3
Outdoor tube-exit sensor error	F7	Overcurrent Protection	E5
Error with exhaust temperature sensor 1 (fixed-frequency)	F8	High-pressure protection	E1

Indoor tube-inlet sensor error	F1	Communication error	E6
Indoor tube-middle sensor error	F2	High-pressure valve error	Fc
Indoor tube-exit sensor error	F3	Low-pressure valve error	Fd
Error with exhaust temperature sensor 2 (fixed-frequency)	F9	Water-full protection (Cassette)	Eb
Error with oil temperature sensor 1 (fixed-frequency)	FA		

King Series

Error	Tube-inlet sensor error	Tube-middle sensor error	Tube-exit sensor error	Room sensor error	Defrost	Antifreeze	Mode conflict	Communication error	Outdoor unit failure
Power Lamp	Bright	Bright	Bright	Bright	Bright	Dark	Dark	Blink	Blink
Test lamp	Dark	Blink	Blink	Bright	Blink	Dark	Blink	Blink	Dark
Timer lamp	Blink	Blink	Bright	Blink	Dark	Blink	Bright	Blink	Dark

Feng Yun and Feng Xia series

Error	Tube-inlet sensor error	Tube-middle sensor error	Tube-exit sensor error	Room sensor error	Defrost	Antifreeze	Mode conflict	Communication error	Outdoor unit failure
Test lamp	Blink（1）				Bright	Dark	Blink	Blink（2）	Blink
Timer lamp	Blink				Blink	Blink	Bright	Blink	Dark

Notes:

① Bright and dark intermittently

② Bright and dark simultaneously

Floor Standing: Lantianshi, qingliangwangzi, fengsheng series

Error	Error Code	Error	Error Code
Indoor tube-inlet sensor error	F1	Indoor tube-middle sensor error	F2
Indoor tube-exit sensor error	F3	Outdoor ambient temperature sensor error	F4
Outdoor tube-inlet sensor error	F5	Outdoor ambient temperature sensor error	F6
Outdoor tube-exit sensor error	F7	Error with exhaust temperature sensor 1 (fixed-frequency)	F8
Error with exhaust temperature sensor 2 (digital)	F9	Error with exhaust temperature sensor 2 (digital)	FA
Error with oil temperature sensor 2 (digital)	Fb	Indoor ambient temperature sensor error	F0
Prevention against low temperature	E2	High-pressure protection	E1
Low-pressure protection	E3	Exhaust overtemperature	E4
Overcurrent Protection	E5	Communication error	E6
Mode conflict	E7	High-pressure valve error	Fc
Low-pressure valve error	Fd		

1.2 Display Code on Digital Tube of Outdoor Mainboard

Error	Display on Digital Tube	Display on Indoor Unit	Error	Display on Digital Tube	Display on Indoor Unit
DC overvoltage protection	PH	E5	Input overcurrent protection	PA	E5
Module overheat protection	P8	E5	Jumper fault	C5	No display
Current test circuit fault	Pc	E5	Recharging circuit fault	PU	E5
Module temperature sensor fault	P7	E5	High-pressure protection	E1	E1
Compressor overcurrent protection	P5	E5	Low-pressure protection	E3	E3
DC undervoltage protection	PL	E5	Exhaust protection	E4	E4
Compressor startup failure	Lc	E5	Compressor overload protection	H3	E5
PFC module protection	Hc	E5	Communication fault (between indoor / outdoor unit and wired controller)	E6	E6
Drive resetting and stop	P0	E5	Outdoor ambient temperature sensor error	F4	F4
Protection of compressor against loss of synchronization	H7	E5	Indoor coil inlet temperature sensor error	F5	F5
Compressor protection against loss of phase	Ld	E5	Indoor coil middle temperature sensor error	F6	F6
Inverter drive communication fault	P6	E5	Outdoor coil outlet temperature sensor error	F7	F7
IPM module protection	H5	E5	Exhaust temperature sensor error	F9	F9

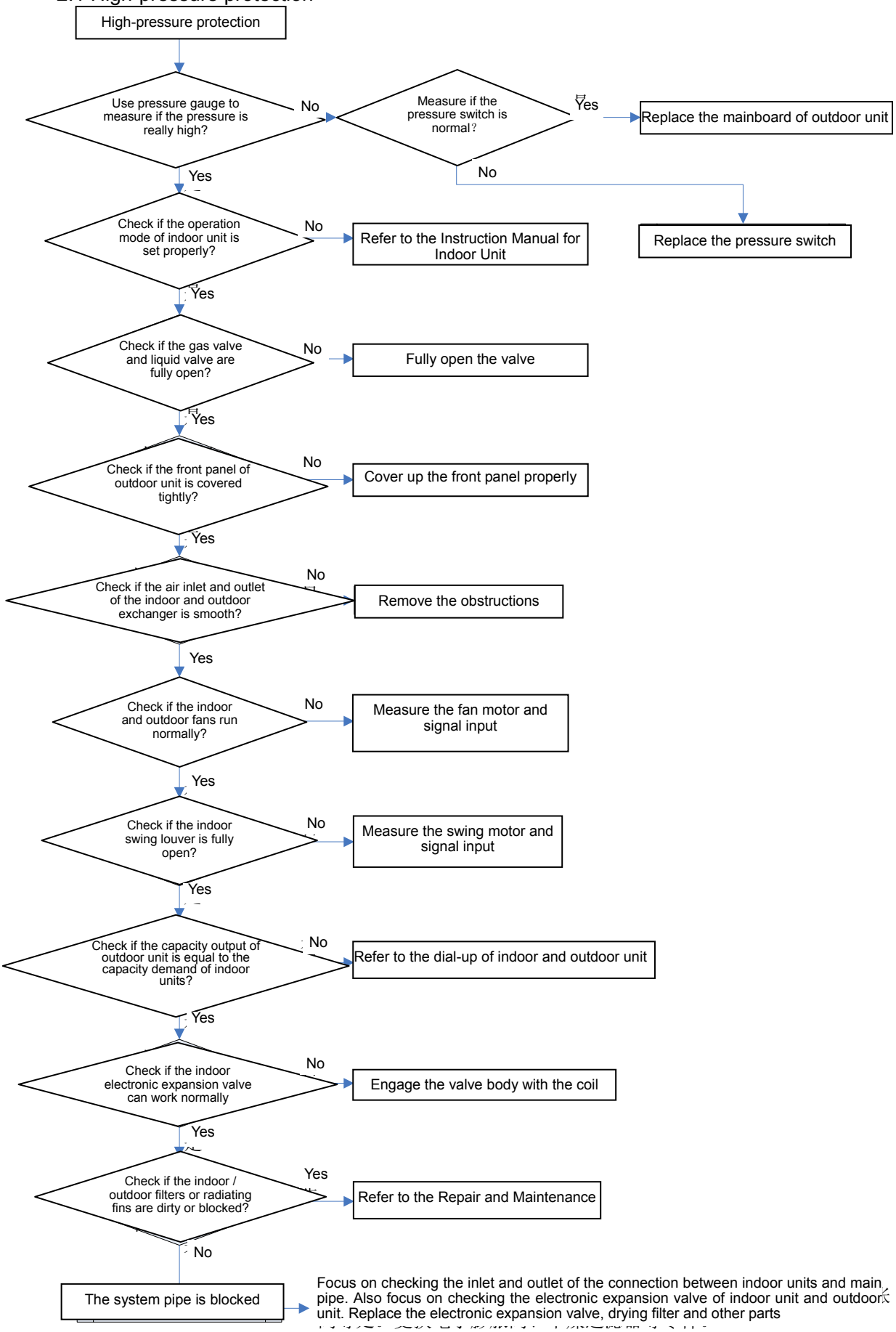
1.3 Display of the number of indoor units

Note: You may press down SW3 key of outdoor unit twice continuously within 2s, so that the system will detect the number of indoor units, in which case the LED1～LED4 will blink in turn, LED5 and LED6 will become dark. After 12 seconds, the number of indoor units will be displayed.

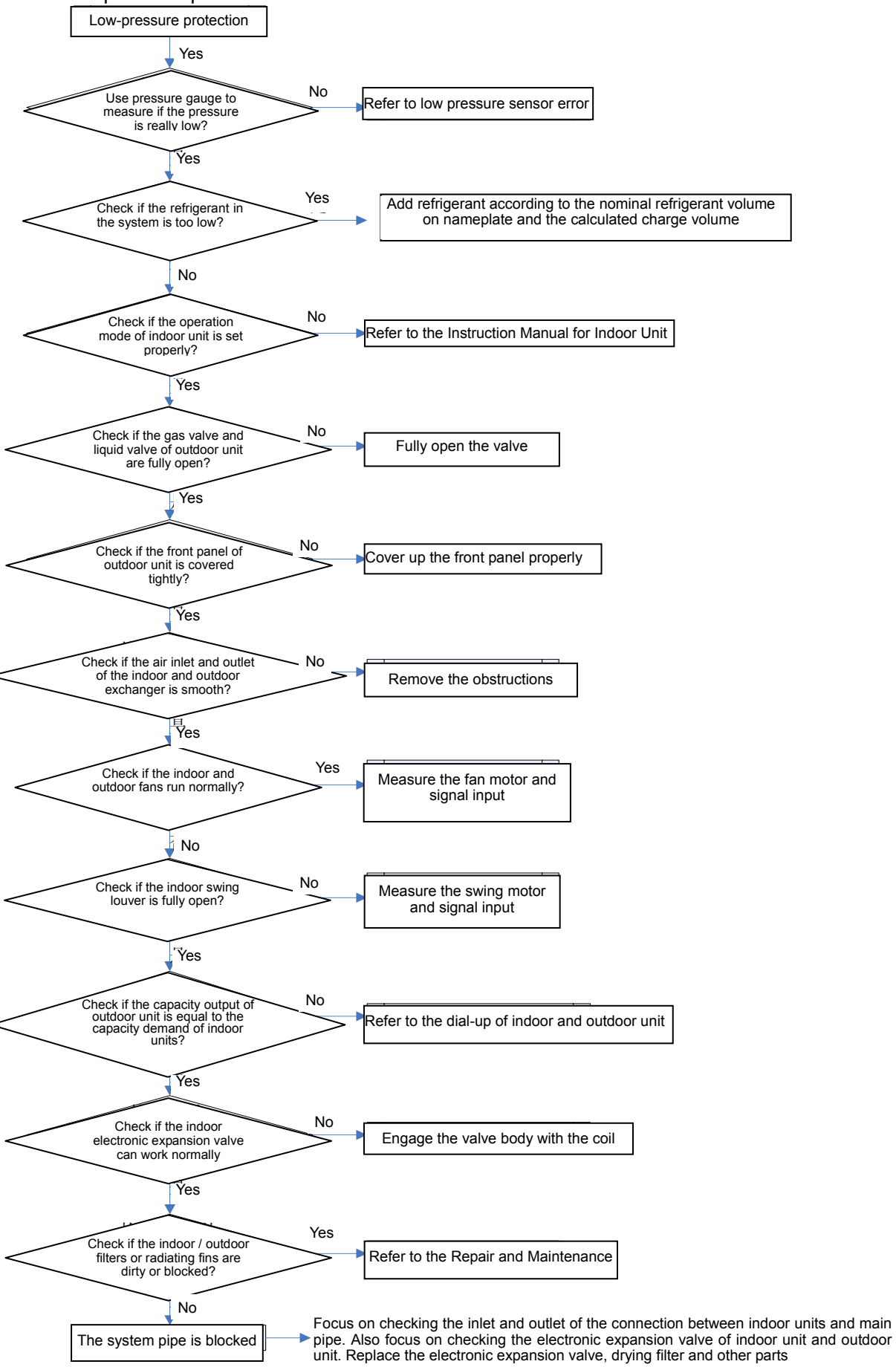
Number of indoor units	Lamp display					
	LED6	LED5	LED4	LED3	LED2	LED1
1	Dark	Dark	Dark	Dark	Dark	Bright
2	Dark	Dark	Dark	Dark	Bright	Dark
3	Dark	Dark	Dark	Dark	Bright	Bright
4	Dark	Dark	Dark	Bright	Dark	Dark
5	Dark	Dark	Dark	Bright	Dark	Bright
6	Dark	Dark	Dark	Bright	Bright	Dark
:	:	:	:	:	:	:
:	:	:	:	:	:	:
62	Bright	Bright	Bright	Bright	Bright	Dark
63	Bright	Bright	Bright	Bright	Bright	Bright

2 FLOW CHART OF TROUBLESHOOTING

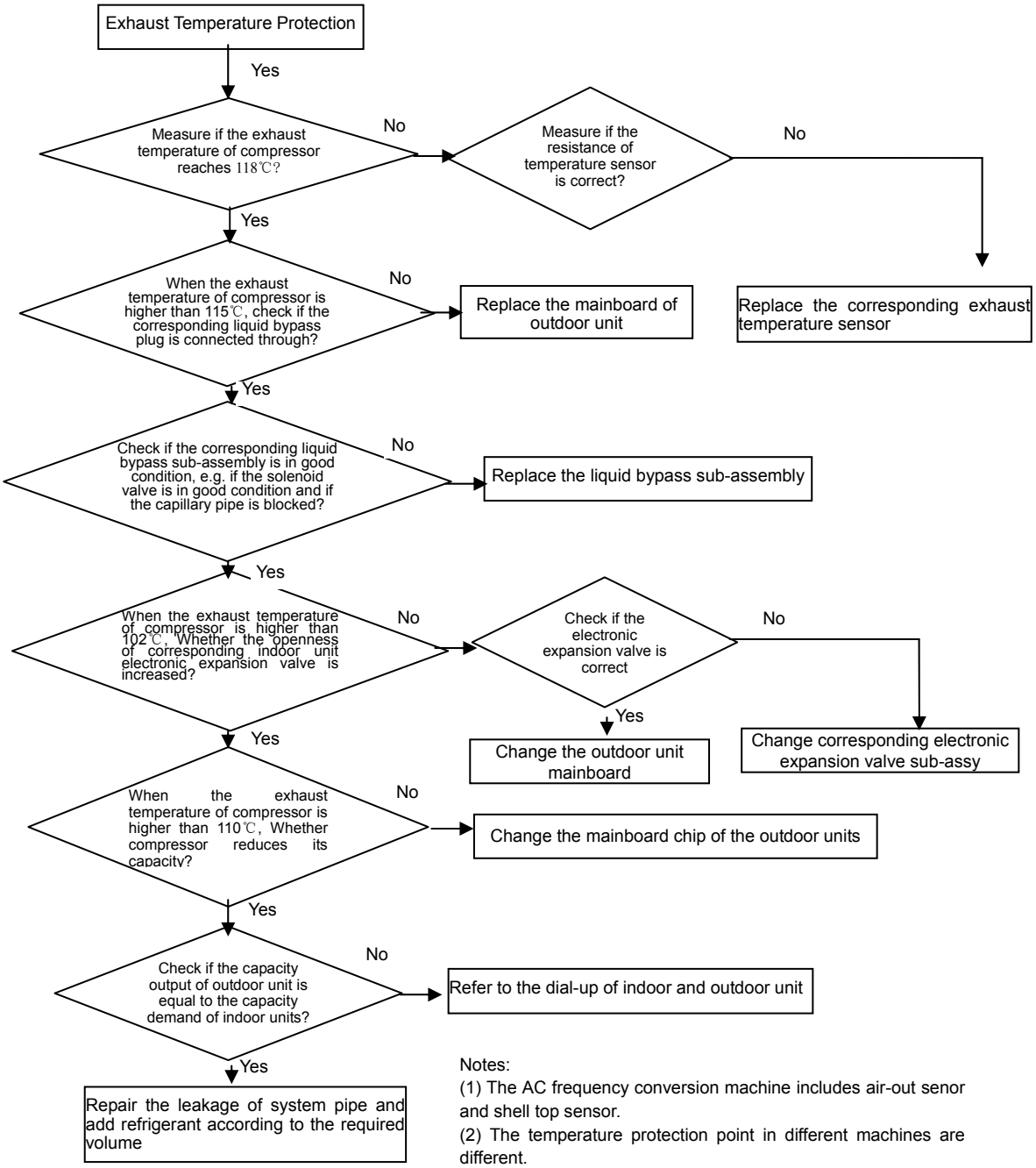
2.1 High-pressure protection


High-pressure protection
Use pressure gauge to measure if the pressure is really high?
No
Measure if the pressure switch is normal?
Yes
Replace the mainboard of outdoor unit
No
Replace the pressure switch
Yes
Check if the operation mode of indoor unit is set properly?
No
Refer to the Instruction Manual for Indoor Unit
Yes
Check if the gas valve and liquid valve are fully open?
No
Fully open the valve
Yes
Check if the front panel of outdoor unit is covered tightly?
No
Cover up the front panel properly
Yes
Check if the air inlet and outlet of the indoor and outdoor exchanger is smooth?
No
Remove the obstructions
Yes
Check if the indoor and outdoor fans run normally?
No
Measure the fan motor and signal input
Yes
Check if the indoor swing louver is fully open?
No
Measure the swing motor and signal input
Yes
Check if the capacity output of outdoor unit is equal to the capacity demand of indoor units?
No
Refer to the dial-up of indoor and outdoor unit
Yes
Check if the indoor electronic expansion valve can work normally
No
Engage the valve body with the coil
Yes
Check if the indoor / outdoor filters or radiating fins are dirty or blocked?
Yes
Refer to the Repair and Maintenance
No
The system pipe is blocked
Focus on checking the inlet and outlet of the connection between indoor units and main pipe. Also focus on checking the electronic expansion valve of indoor unit and outdoor unit. Replace the electronic expansion valve, drying filter and other parts

2.2 Low-pressure protection

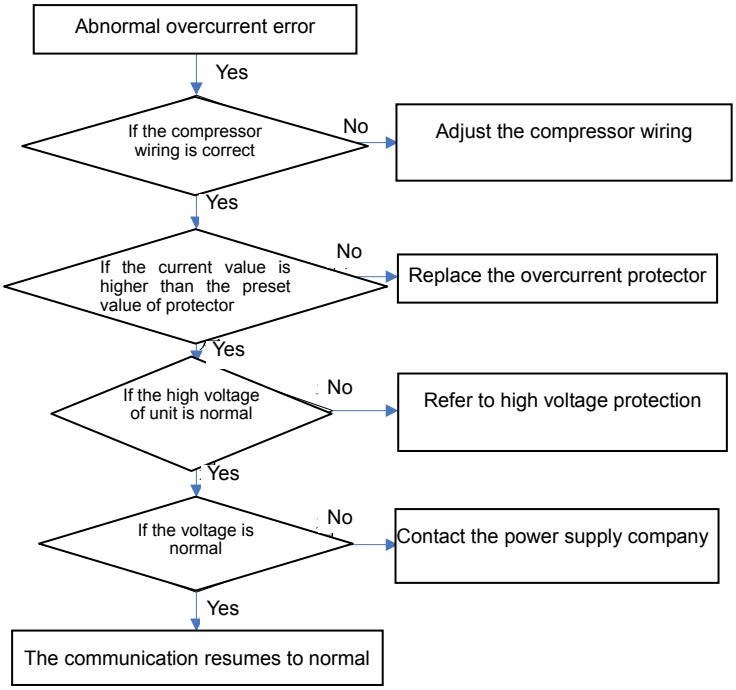

Low-pressure protection
Yes
Use pressure gauge to measure if the pressure is really low?
No
Refer to low pressure sensor error
Yes
Check if the refrigerant in the system is too low?
Yes
Add refrigerant according to the nominal refrigerant volume on nameplate and the calculated charge volume
No
Check if the operation mode of indoor unit is set properly?
No
Refer to the Instruction Manual for Indoor Unit
Yes
Check if the gas valve and liquid valve of outdoor unit are fully open?
No
Fully open the valve
Yes
Check if the front panel of outdoor unit is covered tightly?
No
Cover up the front panel properly
Yes
Check if the air inlet and outlet of the indoor and outdoor exchanger is smooth?
No
Remove the obstructions
Yes
Check if the indoor and outdoor fans run normally?
Yes
Measure the fan motor and signal input
No
Check if the indoor swing louver is fully open?
No
Measure the swing motor and signal input
Yes
Check if the capacity output of outdoor unit is equal to the capacity demand of indoor units?
No
Refer to the dial-up of indoor and outdoor unit
Yes
Check if the indoor electronic expansion valve can work normally
No
Engage the valve body with the coil
Yes
Check if the indoor / outdoor filters or radiating fins are dirty or blocked?
Yes
Refer to the Repair and Maintenance
No
The system pipe is blocked
Focus on checking the inlet and outlet of the connection between indoor units and main pipe. Also focus on checking the electronic expansion valve of indoor unit and outdoor unit. Replace the electronic expansion valve, drying filter and other parts

2.3 Exhaust Temperature Protection

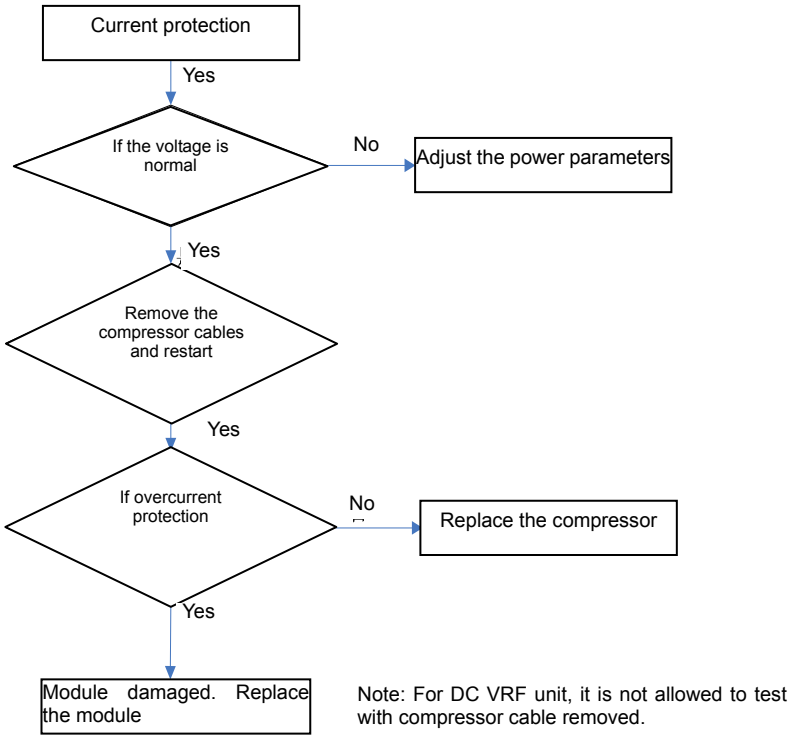

Exhaust Temperature Protection
Yes
Measure if the exhaust temperature of compressor reaches 118℃?
No
Measure if the resistance of temperature sensor is correct?
No
Replace the corresponding exhaust temperature sensor
Yes
When the exhaust temperature of compressor is higher than 115℃, check if the corresponding liquid bypass plug is connected through?
No
Replace the mainboard of outdoor unit
Yes
Check if the corresponding liquid bypass sub-assembly is in good condition, e.g. if the solenoid valve is in good condition and if the capillary pipe is blocked?
No
Replace the liquid bypass sub-assembly
Yes
When the exhaust temperature of compressor is higher than 102℃, Whether the openness of corresponding indoor unit electronic expansion valve is increased?
No
Check if the electronic expansion valve is correct
No
Change corresponding electronic expansion valve sub-assy
Yes
Change the outdoor unit mainboard
Yes
When the exhaust temperature of compressor is higher than 110℃, Whether compressor reduces its capacity?
No
Change the mainboard chip of the outdoor units
Yes
Check if the capacity output of outdoor unit is equal to the capacity demand of indoor units?
No
Refer to the dial-up of indoor and outdoor unit
Yes
Repair the leakage of system pipe and add refrigerant according to the required volume

Notes:
(1) The AC frequency conversion machine includes air-out senor and shell top sensor.
(2) The temperature protection point in different machines are different.
(3) There is no liquid refrigerant by-pass in frequency conversion machine.

2.4 Compressor overcurrent protection

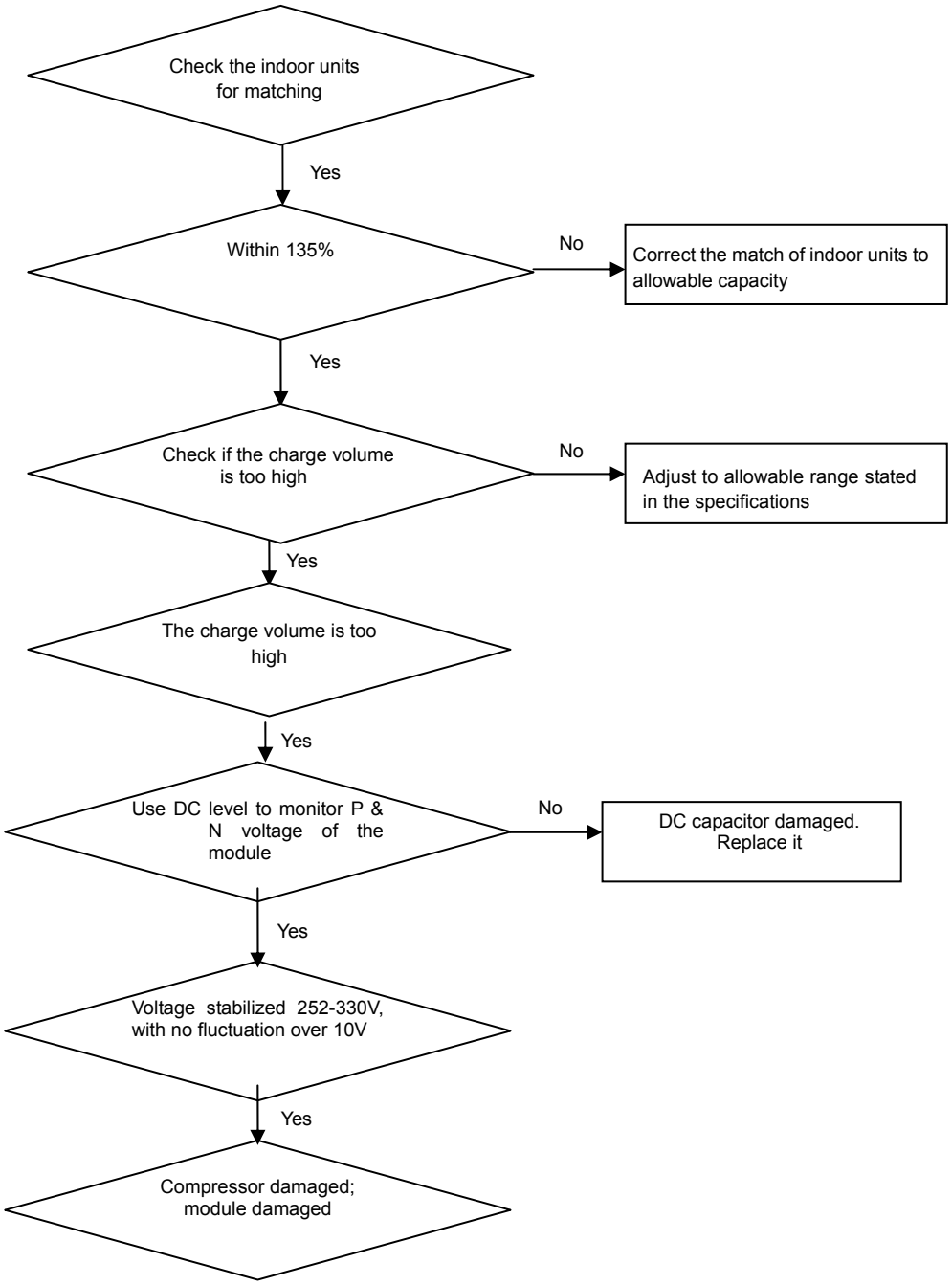


Upon AC inverter startup overcurrent, the indicator will display the current protection.

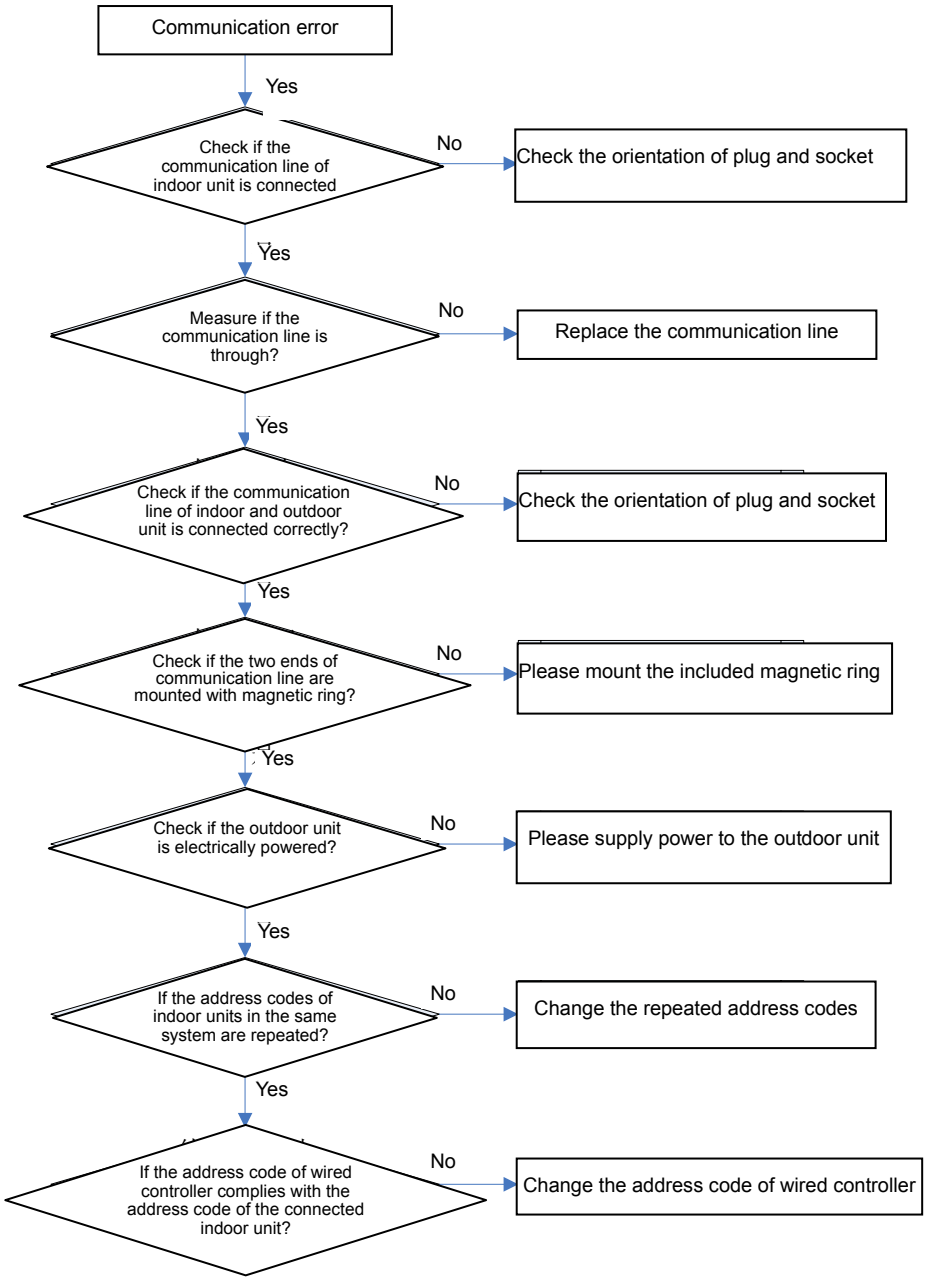


Note: For DC VRF unit, it is not allowed to test with compressor cable removed.

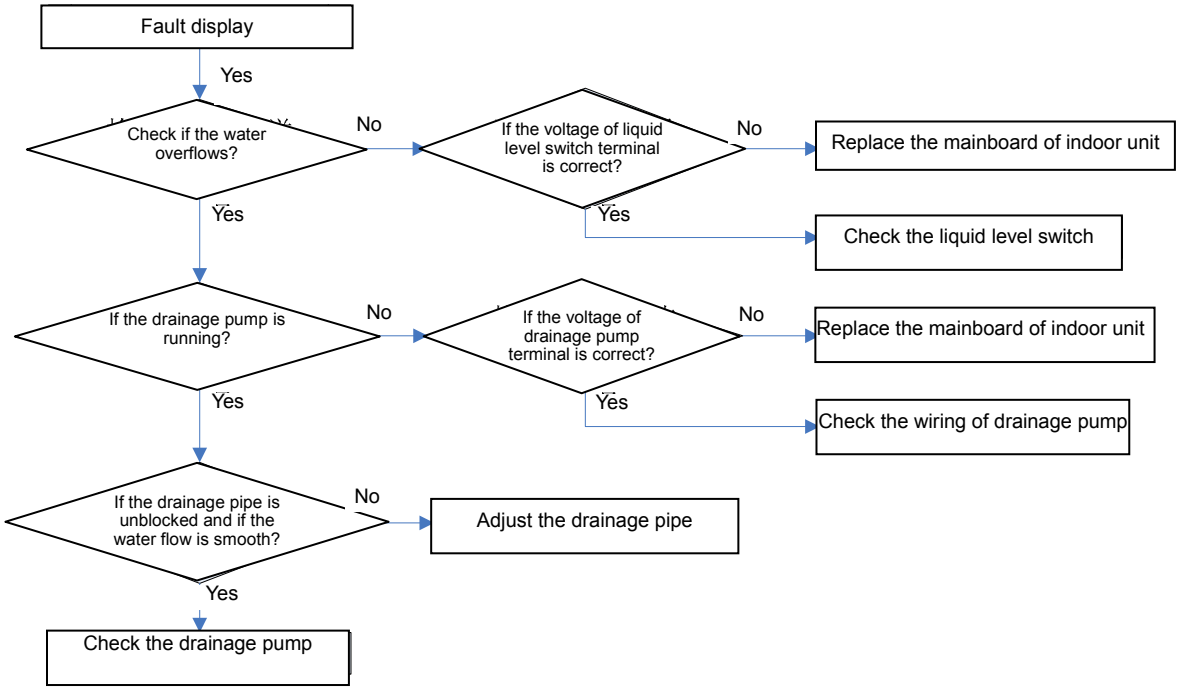
Overcurrent occurs in operation, i.e. the indicator will display the current protection just after startup.


Check the indoor units for matching
Yes
Within 135%
No
Correct the match of indoor units to allowable capacity
Yes
Check if the charge volume is too high
No
Adjust to allowable range stated in the specifications
Yes
The charge volume is too high
Yes
Use DC level to monitor P & N voltage of the module
No
DC capacitor damaged. Replace it
Yes
Voltage stabilized 252-330V, with no fluctuation over 10V
Yes
Compressor damaged; module damaged

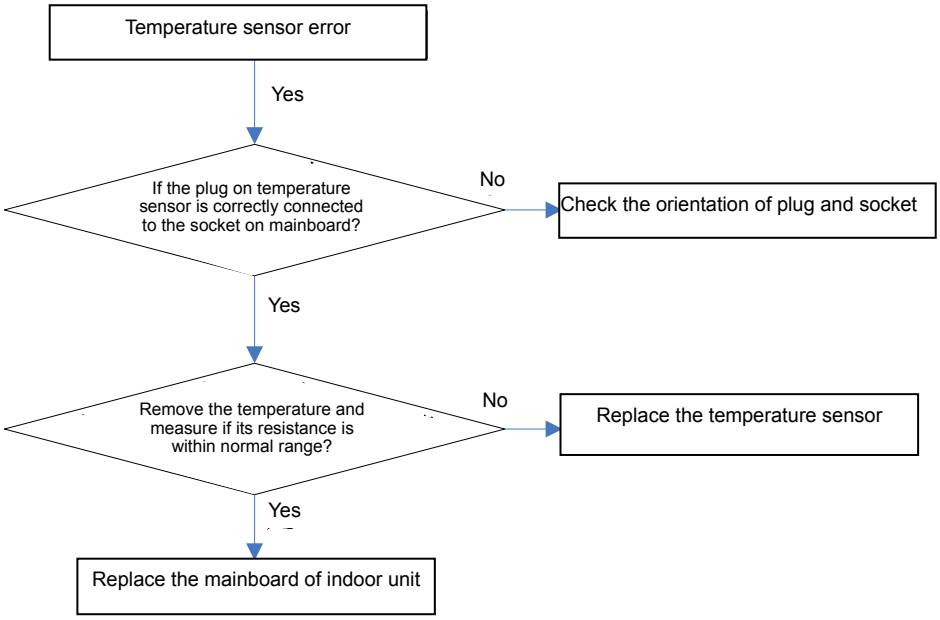
2.5 Communication error


Communication error
Yes
Check if the communication line of indoor unit is connected
No
Check the orientation of plug and socket
Yes
Measure if the communication line is through?
No
Replace the communication line
Yes
Check if the communication line of indoor and outdoor unit is connected correctly?
No
Check the orientation of plug and socket
Yes
Check if the two ends of communication line are mounted with magnetic ring?
No
Please mount the included magnetic ring
Yes
Check if the outdoor unit is electrically powered?
No
Please supply power to the outdoor unit
Yes
If the address codes of indoor units in the same system are repeated?
No
Change the repeated address codes
Yes
If the address code of wired controller complies with the address code of the connected indoor unit?
No
Change the address code of wired controller

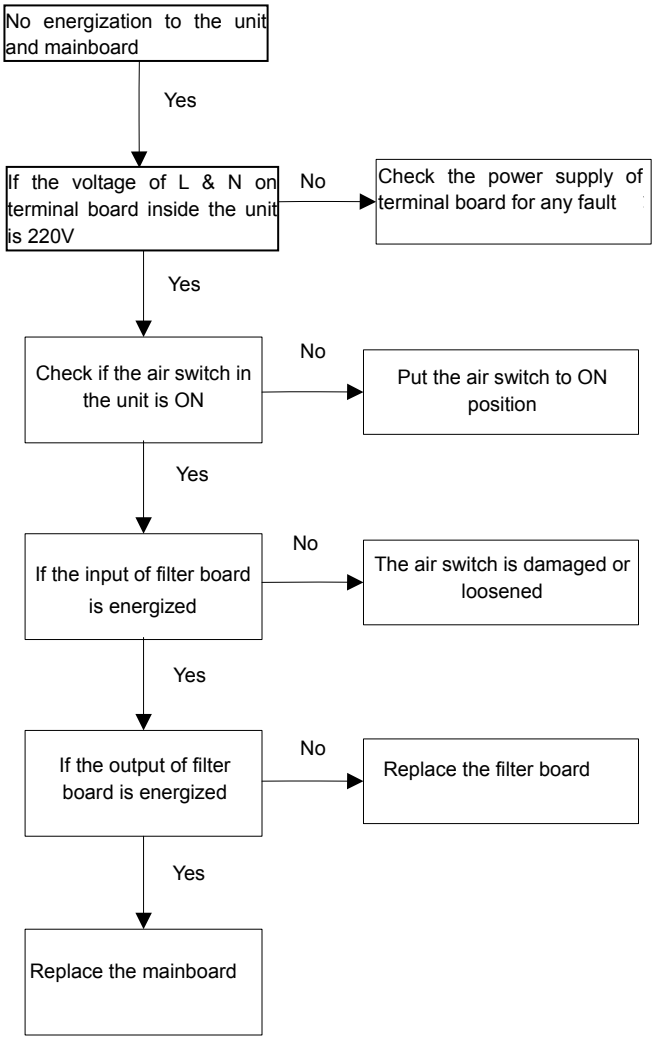
2.6 Water-full protection



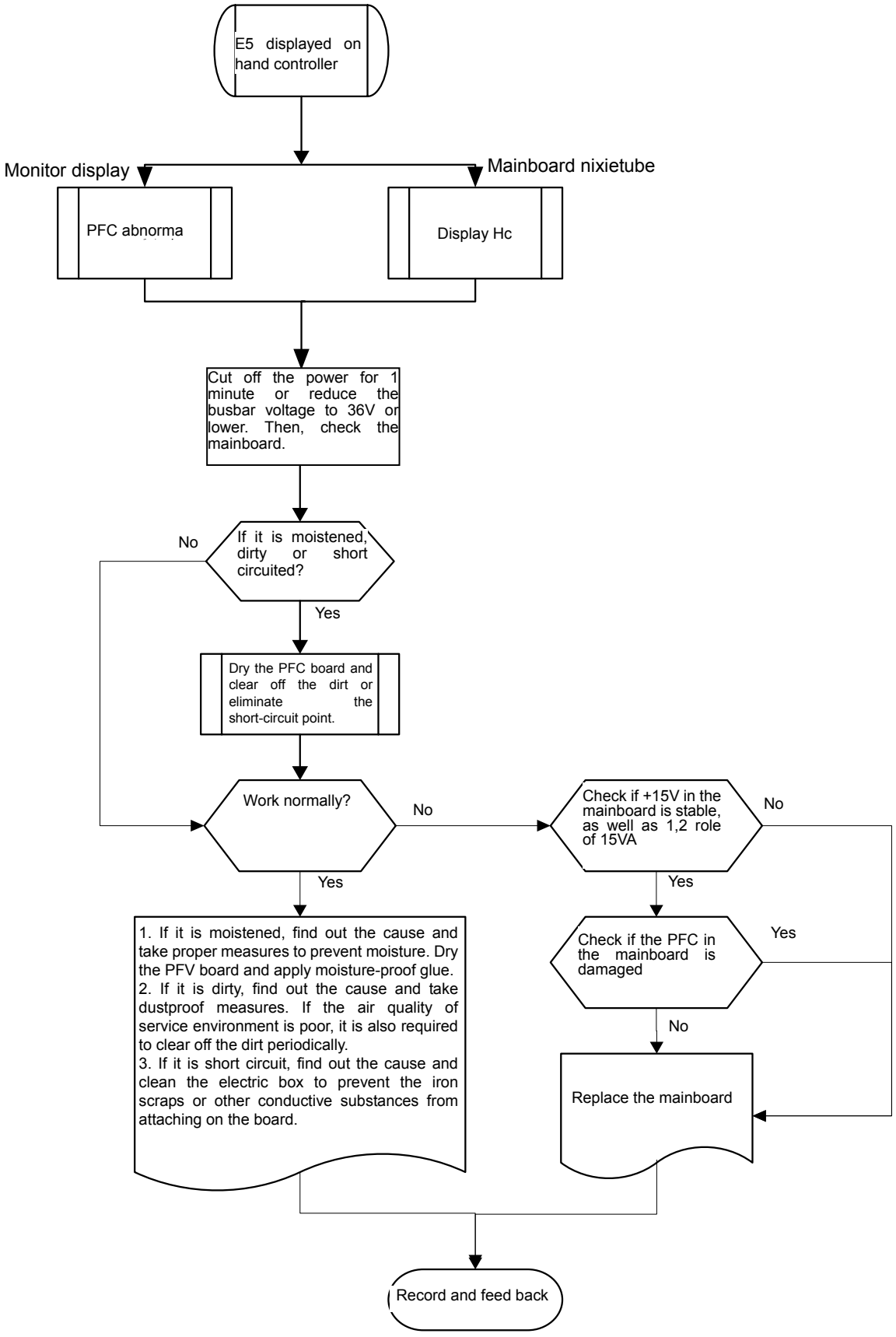
2.7 Error with room sensor, tube-inlet, tube middle and tube-exit sensor; error with room sensor, tube-inlet, tube middle and tube-exit sensor and exhaust / casing top sensor; error with the compressor bottom sensor


Temperature sensor error
Yes
If the plug on temperature sensor is correctly connected to the socket on mainboard?
No
Check the orientation of plug and socket
Yes
Remove the temperature and measure if its resistance is within normal range?
No
Replace the temperature sensor
Yes
Replace the mainboard of indoor unit

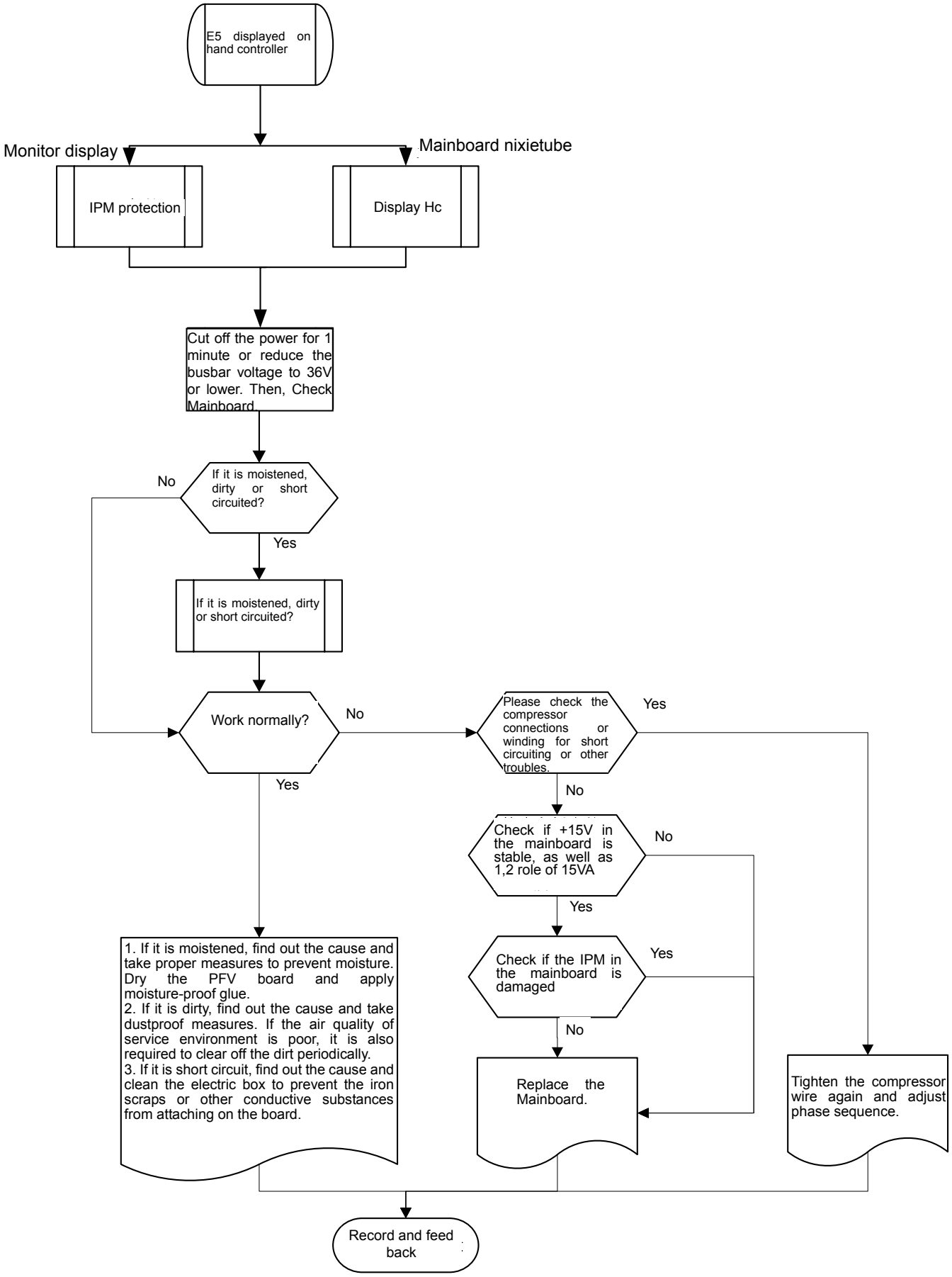
2.8 No energization to the unit and mainboard


No energization to the unit and mainboard
Yes
If the voltage of L & N on terminal board inside the unit is 220V
No
Check the power supply of terminal board for any fault
Yes
Check if the air switch in the unit is ON
No
Put the air switch to ON position
Yes
If the input of filter board is energized
No
The air switch is damaged or loosened
Yes
If the output of filter board is energized
No
Replace the filter board
Yes
Replace the mainboard

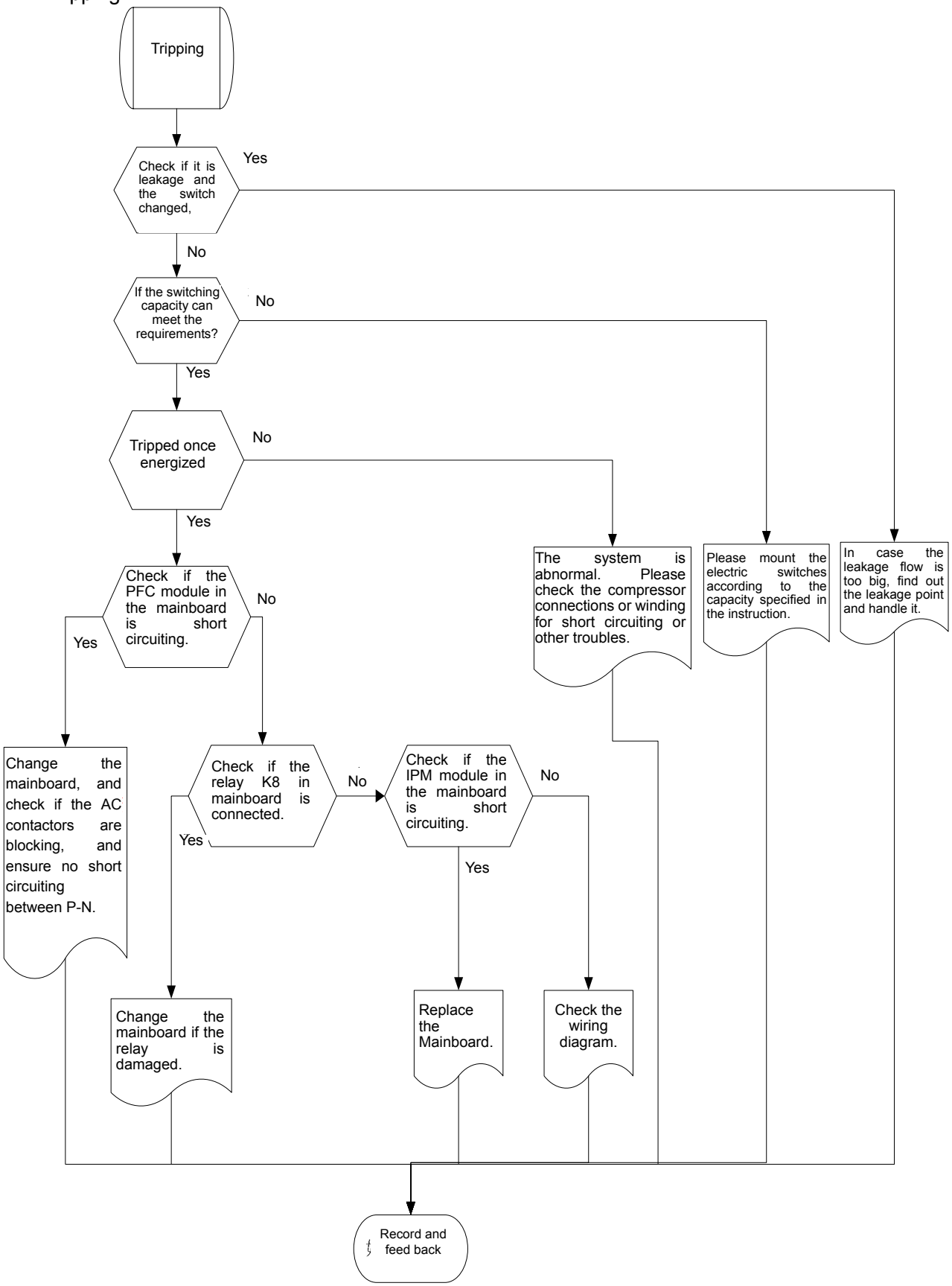
2.9 PFC protection


E5 displayed on hand controller
Monitor display
Mainboard nixietube
PFC abnorma
Display Hc
Cut off the power for 1 minute or reduce the busbar voltage to 36V or lower. Then, check the mainboard.
No
If it is moistened, dirty or short circuited?
Yes
Dry the PFC board and clear off the dirt or eliminate the short-circuit point.
Work normally?
No
Check if +15V in the mainboard is stable, as well as 1,2 role of 15VA
No
Yes
Yes
1. If it is moistened, find out the cause and take proper measures to prevent moisture. Dry the PFV board and apply moisture-proof glue.
2. If it is dirty, find out the cause and take dustproof measures. If the air quality of service environment is poor, it is also required to clear off the dirt periodically.
3. If it is short circuit, find out the cause and clean the electric box to prevent the iron scraps or other conductive substances from attaching on the board.
Check if the PFC in the mainboard is damaged
Yes
No
Replace the mainboard
Record and feed back

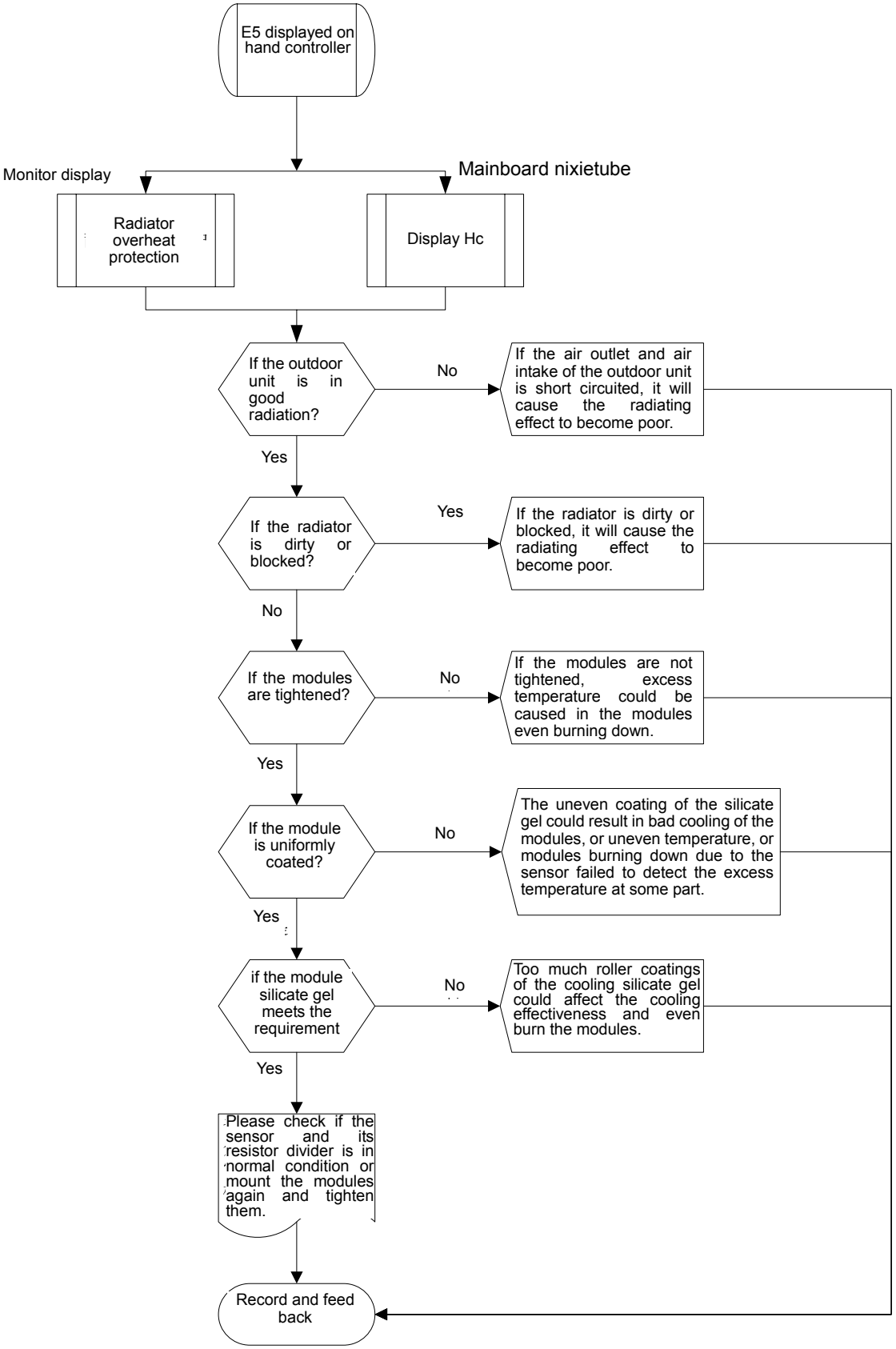
2.10 IPM protection


E5 displayed on hand controller
Monitor display
Mainboard nixietube
IPM protection
Display Hc
Cut off the power for 1 minute or reduce the busbar voltage to 36V or lower. Then, Check Mainboard.
No
If it is moistened, dirty or short circuited?
Yes
If it is moistened, dirty or short circuited?
Work normally?
No
Please check the compressor connections or winding for short circuiting or other troubles.
Yes
No
Check if +15V in the mainboard is stable, as well as 1,2 role of 15VA
No
Yes
Check if the IPM in the mainboard is damaged
Yes
No
Yes
1. If it is moistened, find out the cause and take proper measures to prevent moisture. Dry the PFV board and apply moisture-proof glue.
2. If it is dirty, find out the cause and take dustproof measures. If the air quality of service environment is poor, it is also required to clear off the dirt periodically.
3. If it is short circuit, find out the cause and clean the electric box to prevent the iron scraps or other conductive substances from attaching on the board.
Replace the Mainboard.
Tighten the compressor wire again and adjust phase sequence.
Record and feed back

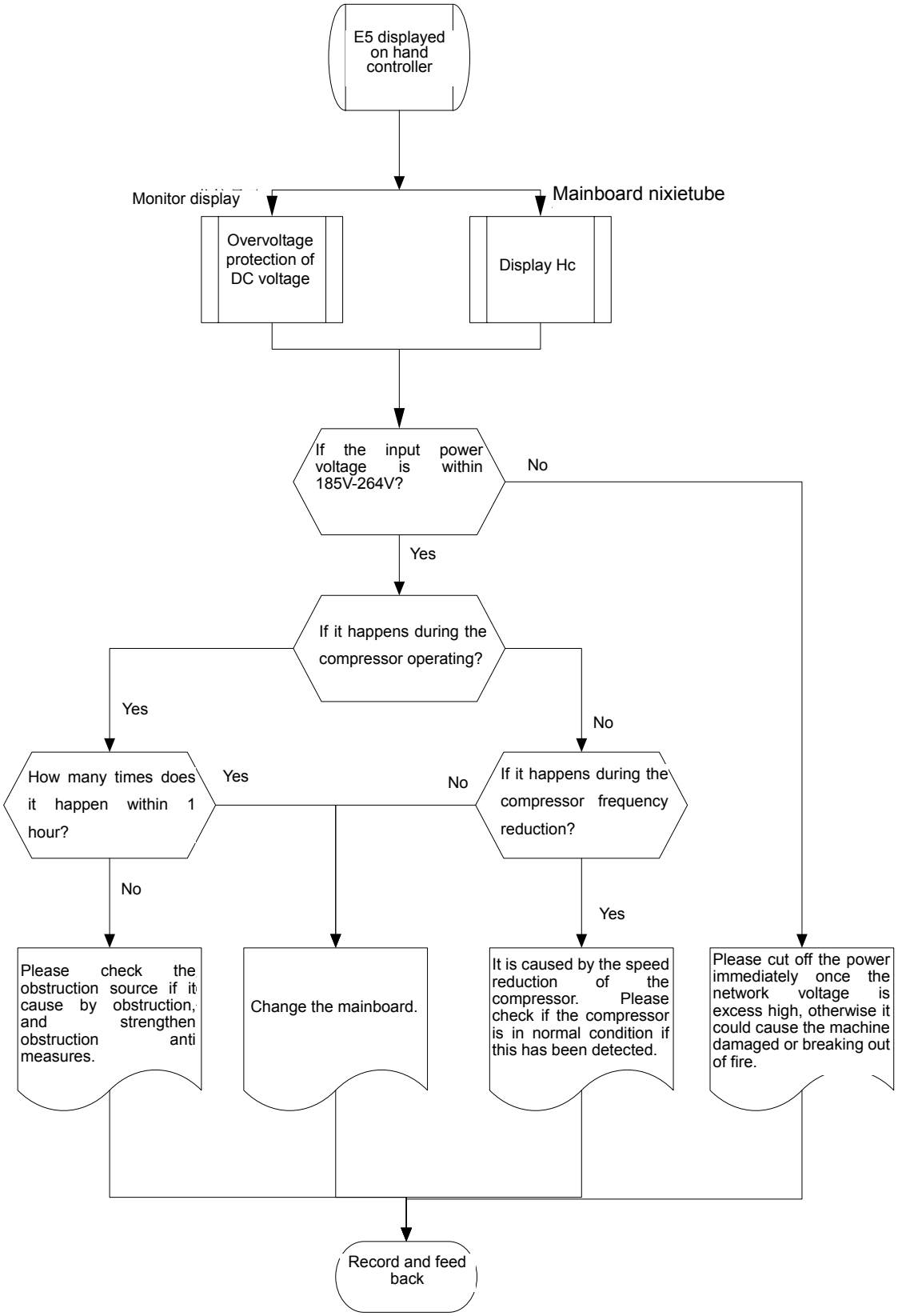
2.11 Tripping


Tripping
Check if it is leakage and the switch changed,
Yes
No
If the switching capacity can meet the requirements?
No
Yes
Tripped once energized
No
Yes
Check if the PFC module in the mainboard is short circuiting.
No
Yes
The system is abnormal. Please check the compressor connections or winding for short circuiting or other troubles.
Please mount the electric switches according to the capacity specified in the instruction.
In case the leakage flow is too big, find out the leakage point and handle it.
Change the mainboard, and check if the AC contactors are blocking, and ensure no short circuiting between P-N.
Check if the relay K8 in mainboard is connected.
No
Yes
Check if the IPM module in the mainboard is short circuiting.
No
Yes
Change the mainboard if the relay is damaged.
Replace the Mainboard.
Check the wiring diagram.
Record and feed back

2.12 Radiator overheat protection

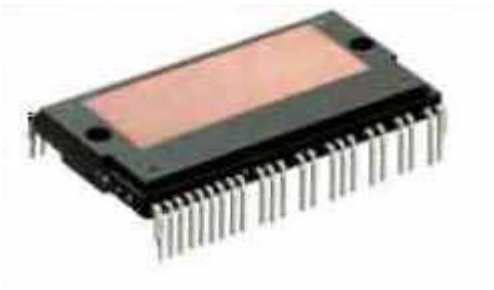
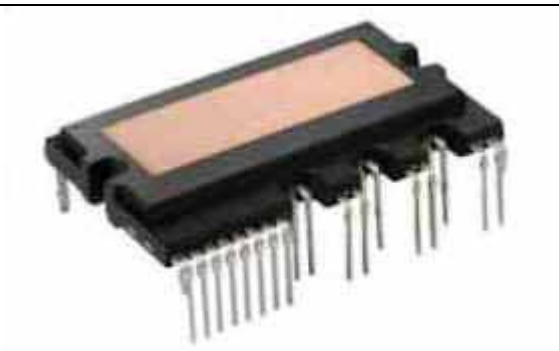

E5 displayed on hand controller
Monitor display
Mainboard nixietube
Radiator overheat protection
Display Hc
If the outdoor unit is in good radiation?
No
If the air outlet and air intake of the outdoor unit is short circuited, it will cause the radiating effect to become poor.
Yes
If the radiator is dirty or blocked?
Yes
If the radiator is dirty or blocked, it will cause the radiating effect to become poor.
No
If the modules are tightened?
No
If the modules are not tightened, excess temperature could be caused in the modules even burning down.
Yes
If the module is uniformly coated?
No
The uneven coating of the silicate gel could result in bad cooling of the modules, or uneven temperature, or modules burning down due to the sensor failed to detect the excess temperature at some part.
Yes
if the module silicate gel meets the requirement
No
Too much roller coatings of the cooling silicate gel could affect the cooling effectiveness and even burn the modules.
Yes
Please check if the sensor and its resistor divider is in normal condition or mount the modules again and tighten them.
Record and feed back

2.13 Overvoltage protection of DC voltage


E5 displayed on hand controller
Monitor display
Mainboard nixietube
Overvoltage protection of DC voltage
Display Hc
If the input power voltage is within 185V-264V?
No
Yes
If it happens during the compressor operating?
Yes
No
How many times does it happen within 1 hour?
Yes
No
If it happens during the compressor frequency reduction?
No
Yes
Please check the obstruction source if it cause by obstruction, and strengthen obstruction anti measures.
Change the mainboard.
It is caused by the speed reduction of the compressor. Please check if the compressor is in normal condition if this has been detected.
Please cut off the power immediately once the network voltage is excess high, otherwise it could cause the machine damaged or breaking out of fire.
Record and feed back

3 CIRCUIT DIAGRAM

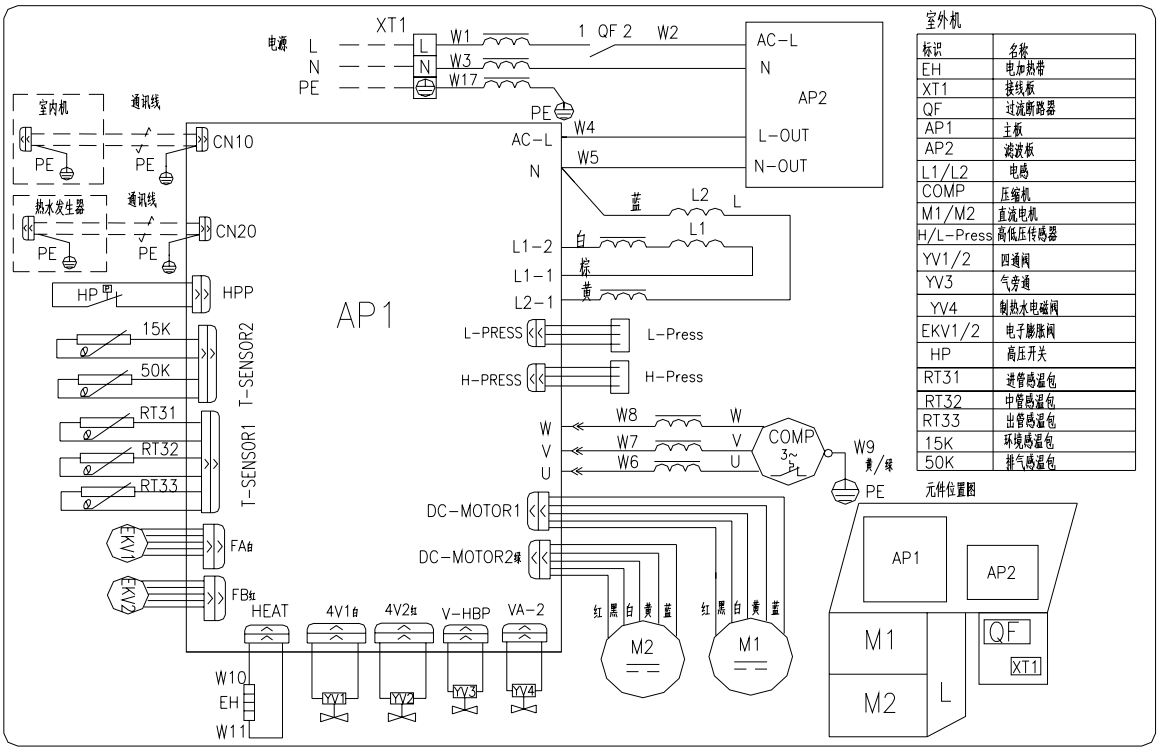
3.1 Introduction of Major Electrical Elements

Name	Photo	Function Introduction
Filter board		Main functions: 1) Filter the power interference and ensure the anti-interference ability of the unit under poor quality of power supply; 2) Inhibit the interference of the unit to the power supply and prevent the operation of unit from affecting other electric appliances like TV.
Air switch		For connecting and disconnecting the circuit of main loop, provided with overcurrent and short-circuit protection.
IPM module		The IPM module integrates 3 pairs of complementary IGBT tube and controls their connection and disconnection via PWM wave, so that the DC bus voltage is applied to different stator windings of the compressor in different time section and the current is hence generated on the stator. Meanwhile, magnetic field is induced on the rotor windings, thus to push the rotor and drive the compressor to run.
PFC module		The PFC module integrates 4 diode tubes and 2 MOS tubes. They convert the AC input power into DC power. Meanwhile, the connection and disconnection of MOS tube is controlled via PWM wave, thus to realize the voltage rise under the function of electric induction.

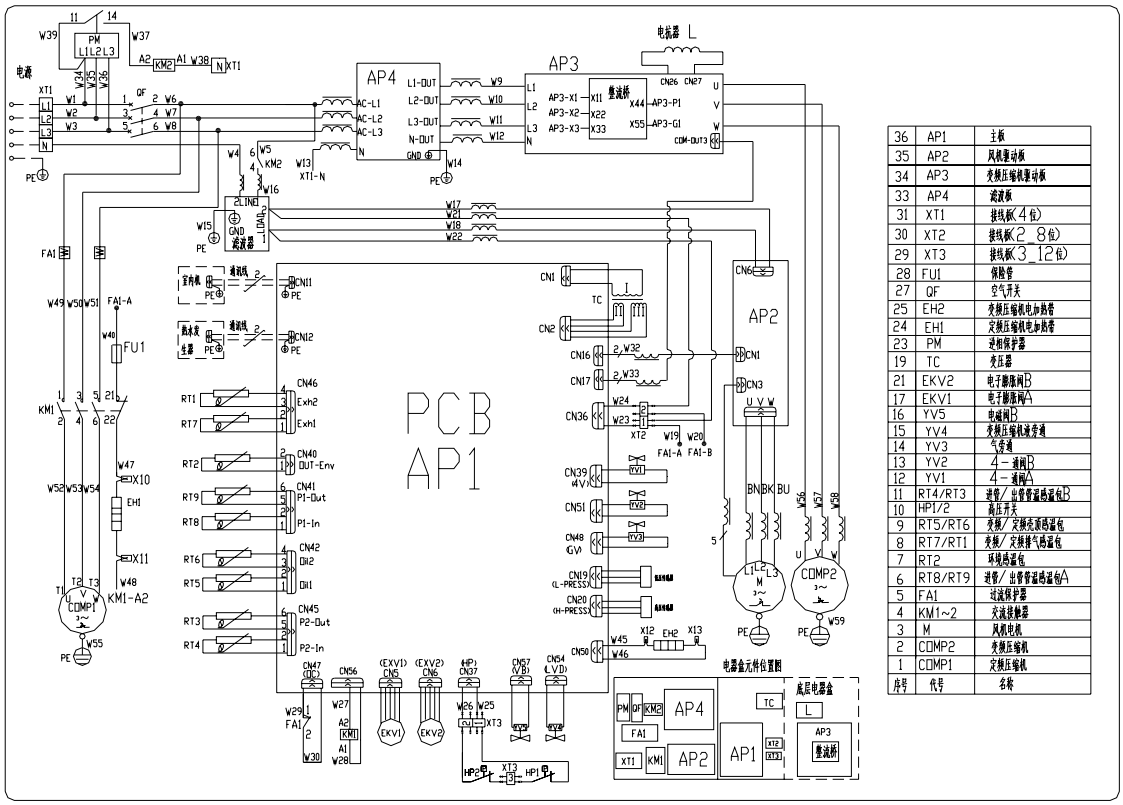
3.2 WIRING DIADRAM

3.2.1 Circuit diagram of Outdoor Unit

GMV-Pds100W/Na-K. GMV-Pds120W/Na-K. GMV-Pds140W/Na-K.GMV-Pds160W/Na-K

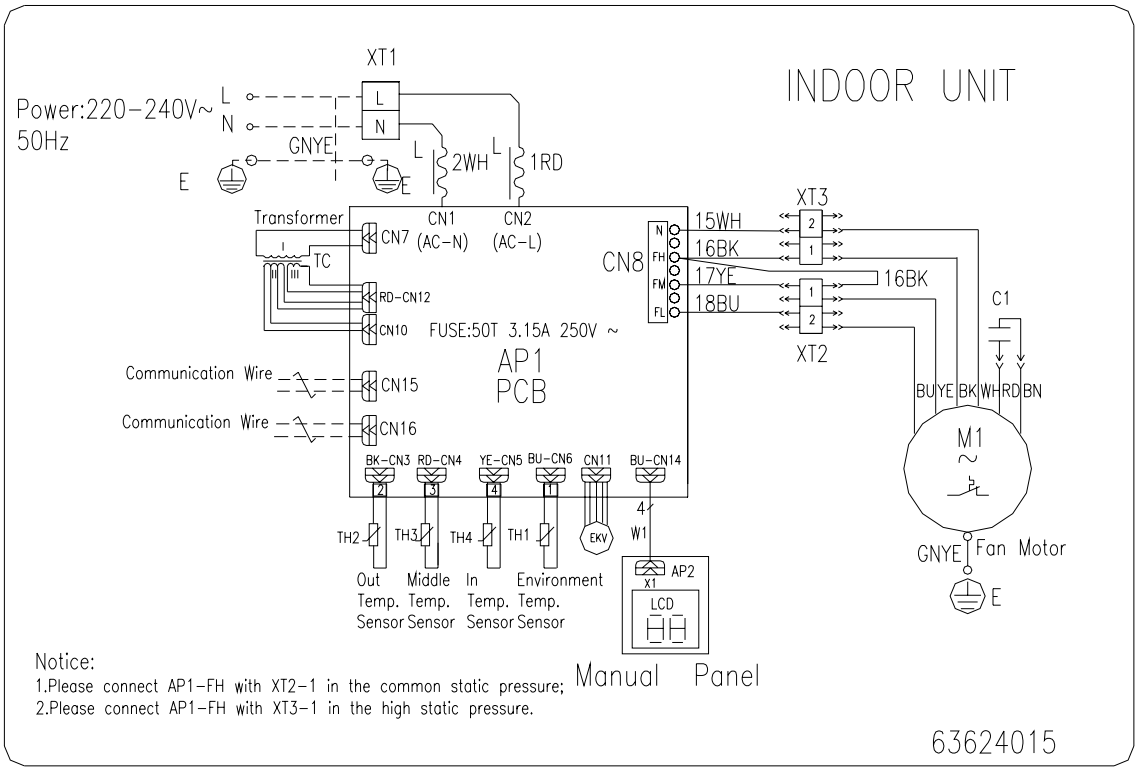


GMV-Pds224W/Na-M.GMV-Pds280W/Na-M

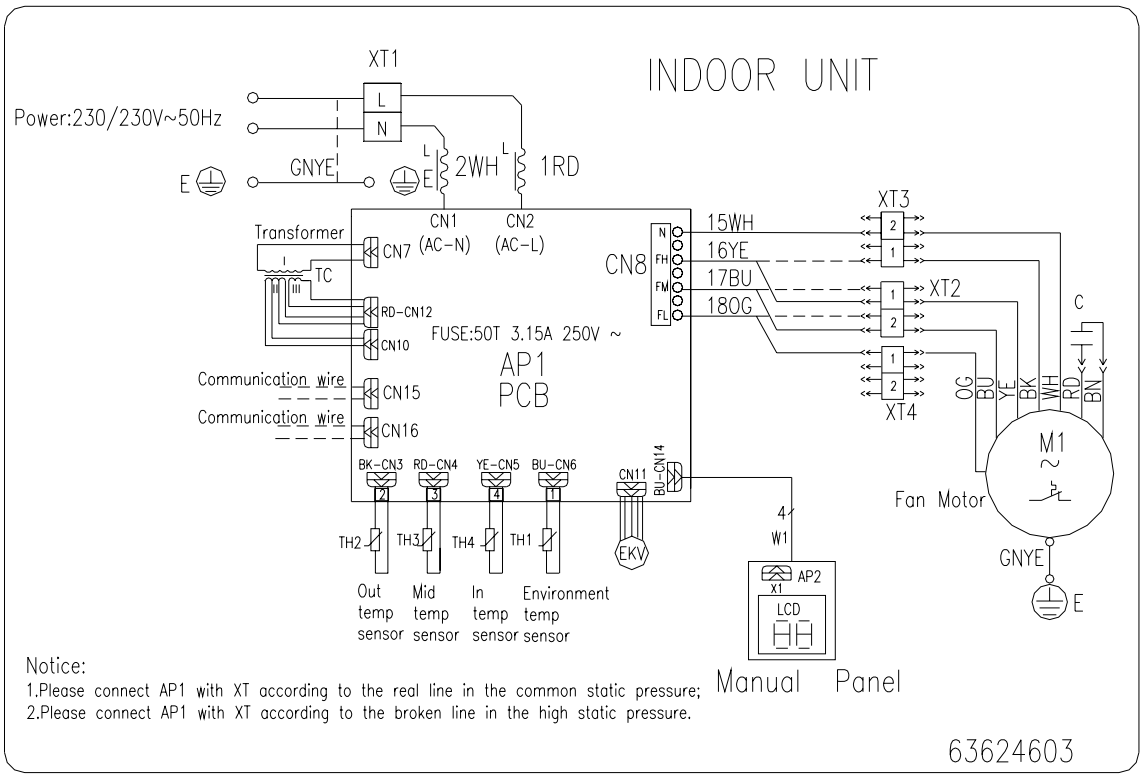


3.2.2 Circuit Diagram of Indoor Unit

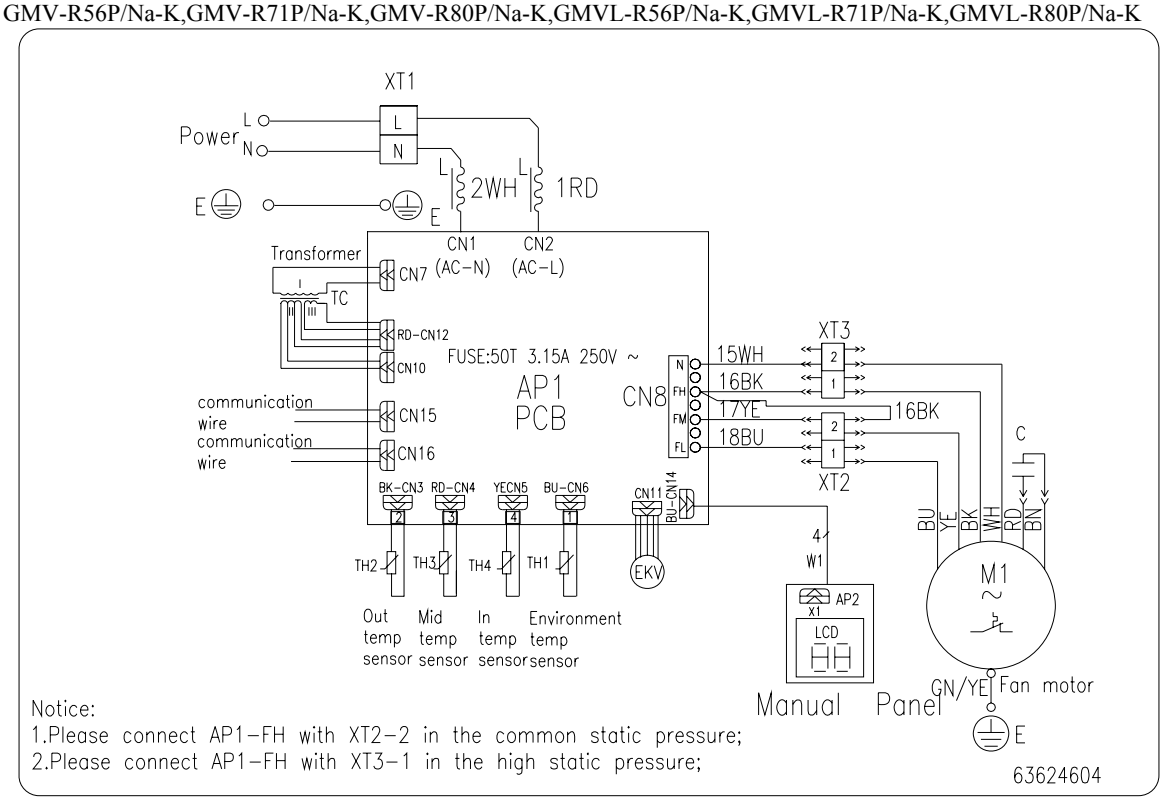
GMV-R22P/Na-K,GMV-R25P/Na-K,GMV-R28P/Na-K,GMV-R32P/Na-K,GMV-R36P/Na-K,GMVL-R22P/Na-K ,GMVL-R25P/Na-K,GMVL-R28P/Na-K, GMVL-R32P/Na-K,GMVL-R36P/Na-K



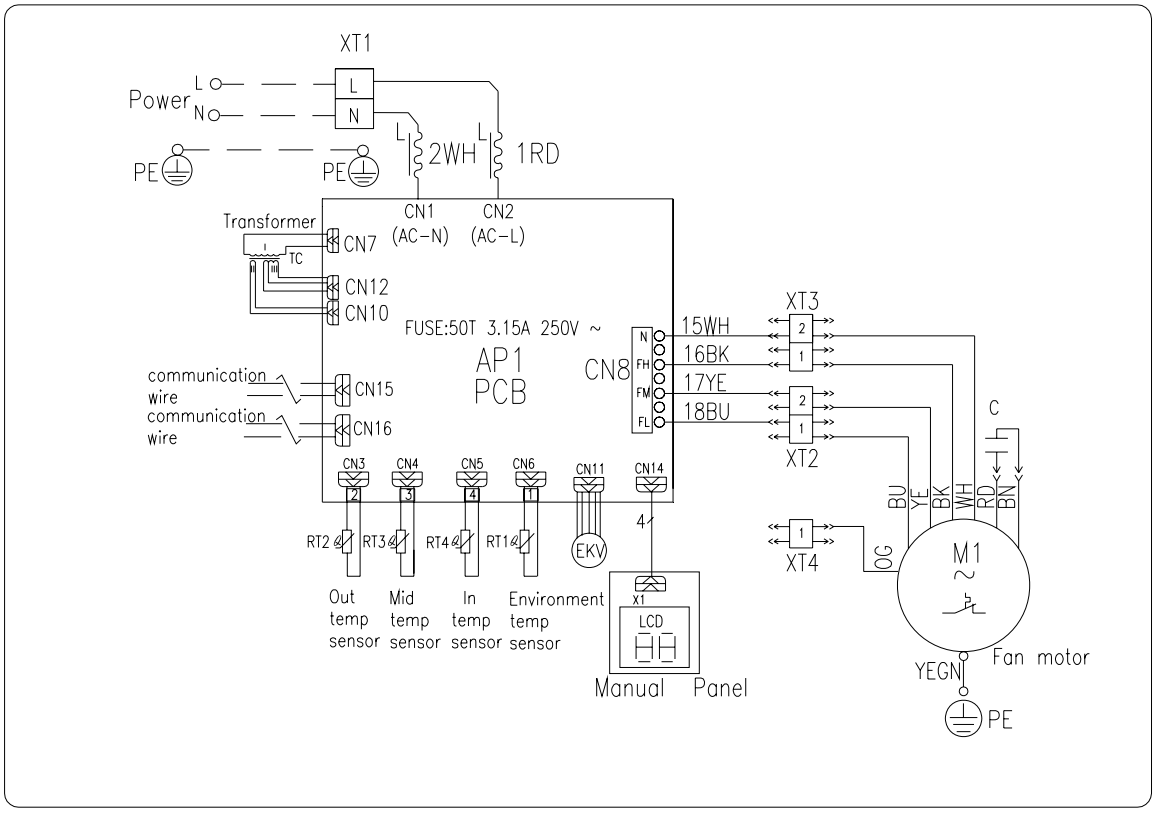
GMV-R40P/Na-K ， GMV-R45P/Na-K ,GMV-R50P/Na-K, GMVL-R40P/Na-K ， GMVL-R45P/Na-K GMVL-R50P/Na-K,



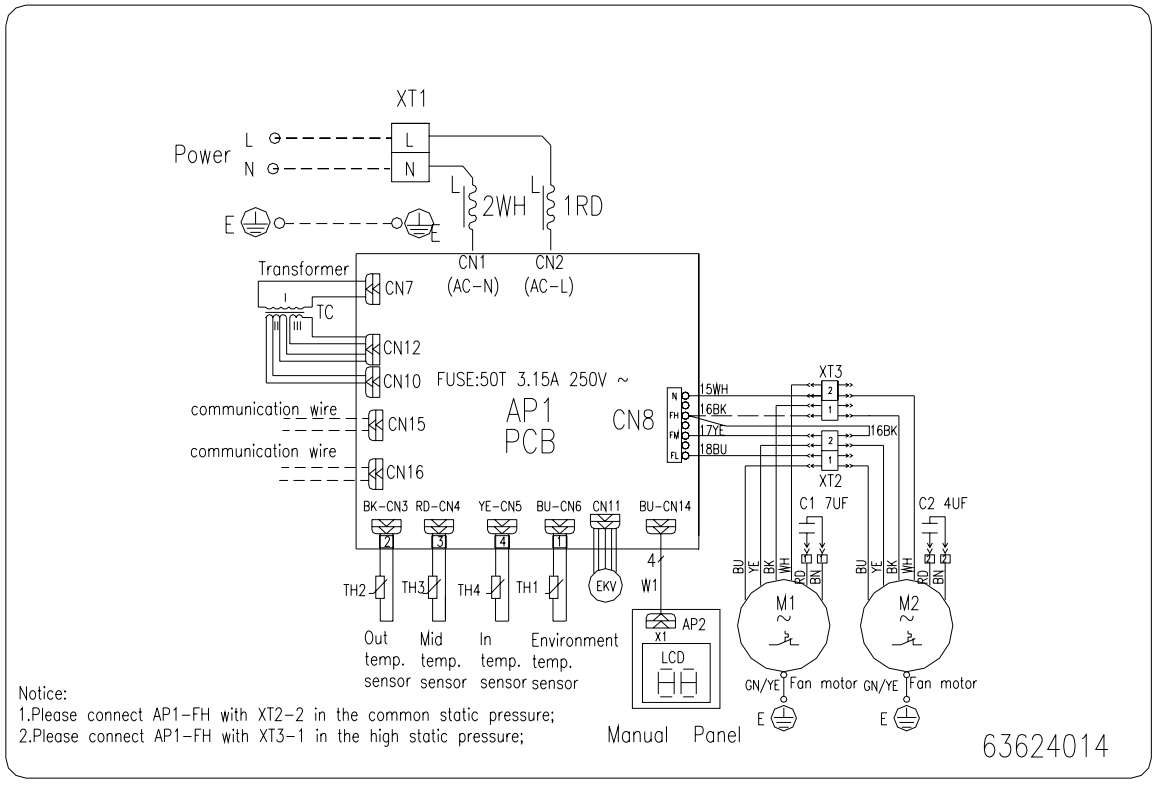
GMV-R56P/Na-K,GMV-R71P/Na-K,GMV-R80P/Na-K,GMVL-R56P/Na-K,GMVL-R71P/Na-K,GMVL-R80P/Na-K



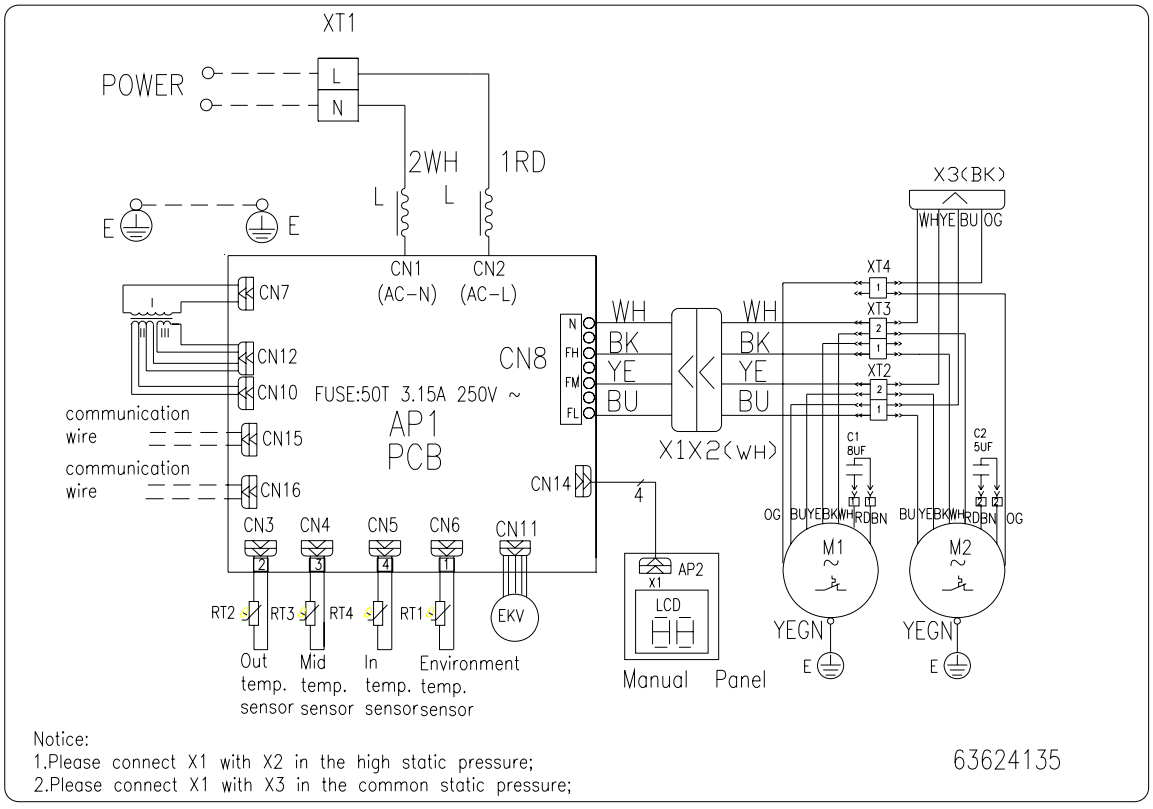
GMV-R63P/Na-K、GMVL-R63P/Na-K



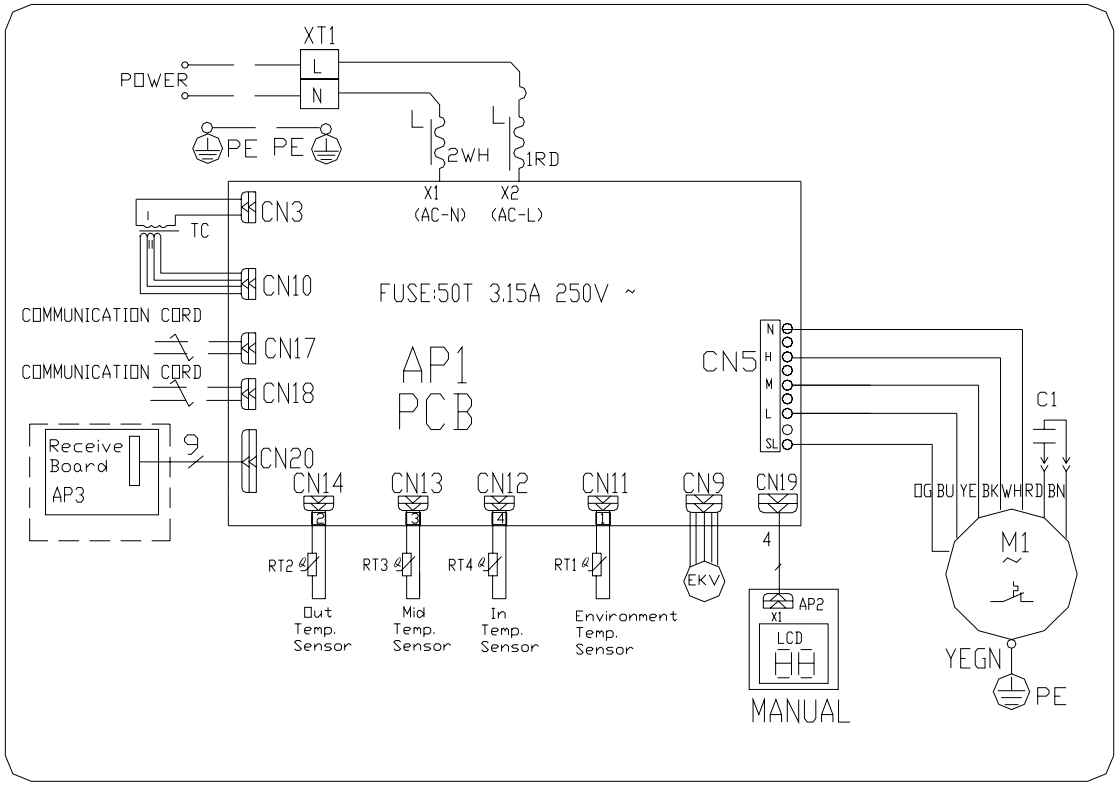
GMV-R90P/Na-K, GMV-R100P/Na-K GMV-R112P/Na-K,GMV-R140P/Na-K,GMVL-R90P/Na-K, GMVL-R100P/Na-K GMVL-R112P/Na-K,GMVL-R140P/Na-K



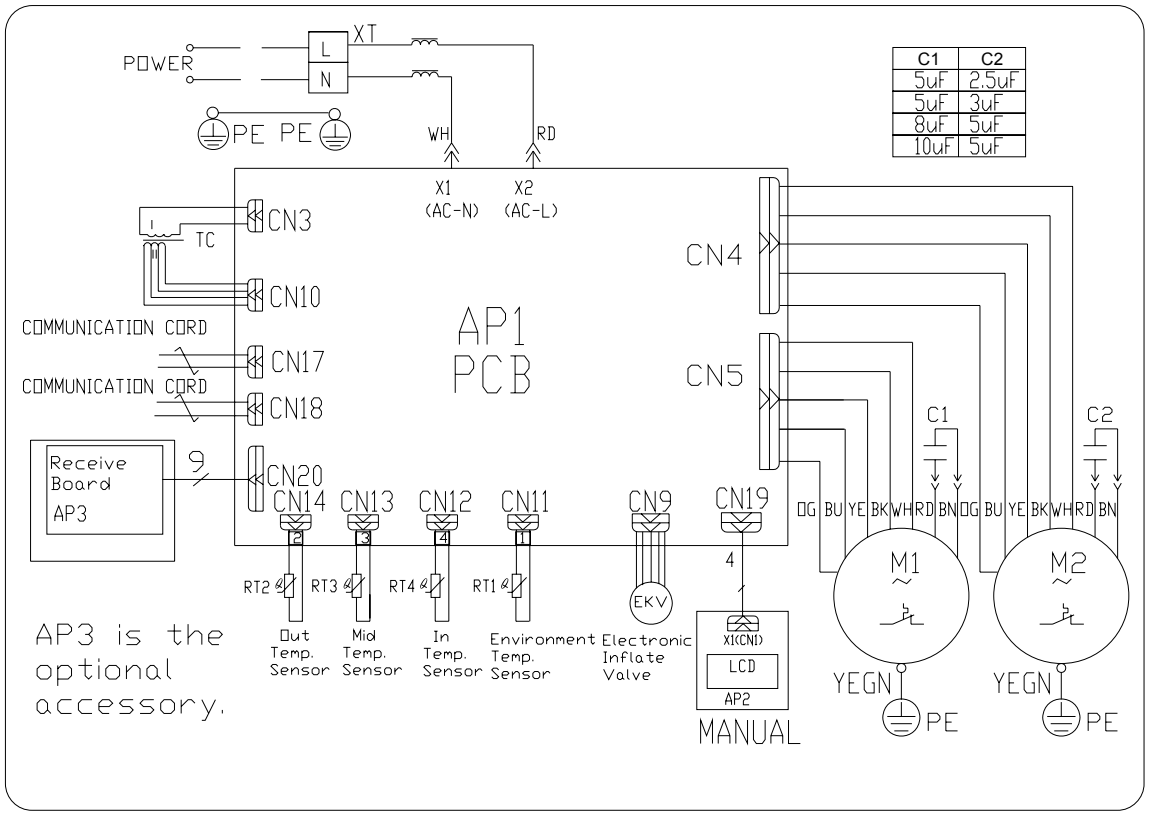
GMV-R125P/Na-K,GMVL-R125P/Na-K



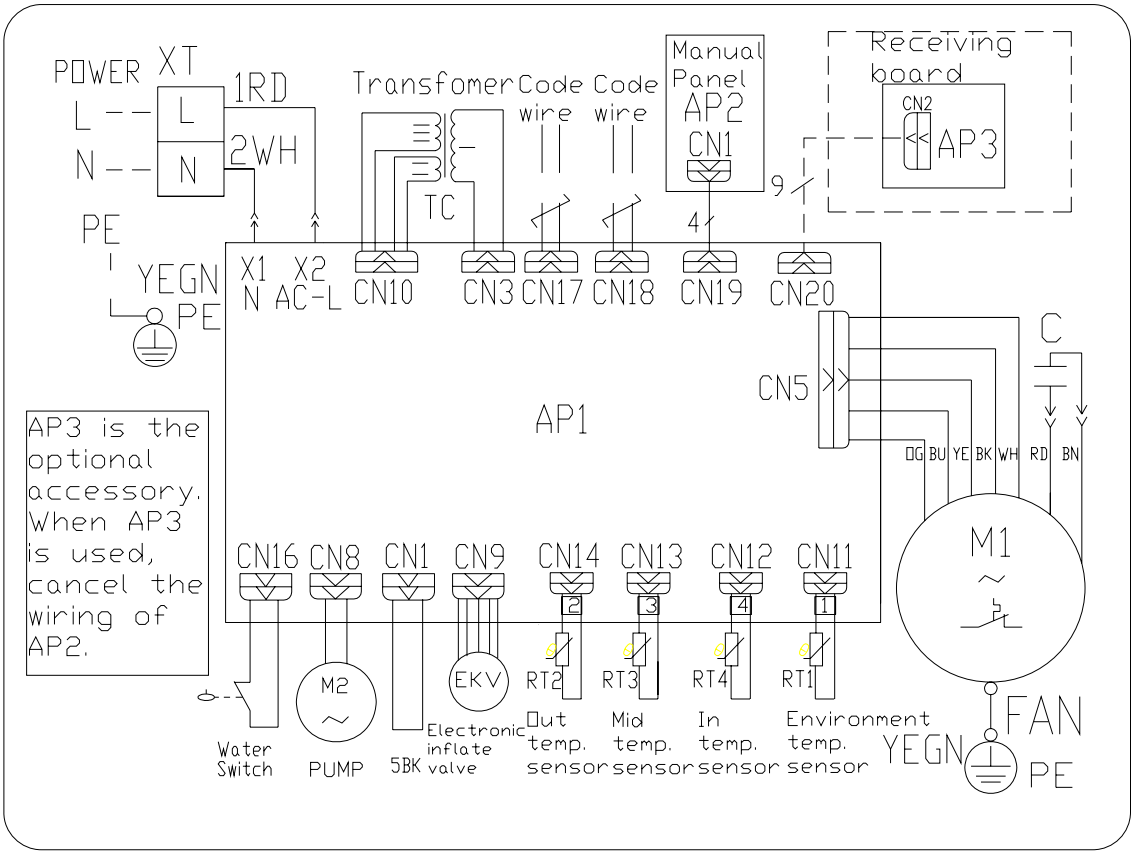
GMV-R22P/NaB-K、GMV-R28P/NaB-K、GMV-R36P/NaB-K、GMV-R45P/NaB-K、GMV-R56P/NaB-K、GMV-R71P/NaB-K、GMVL-R22P/NaB-K、GMVL-R28P/NaB-K、GMVL-R36P/NaB-K、GMVL-R45P/NaB-K、GMVL-R56P/NaB-K、GMVL-R71P/NaB-K



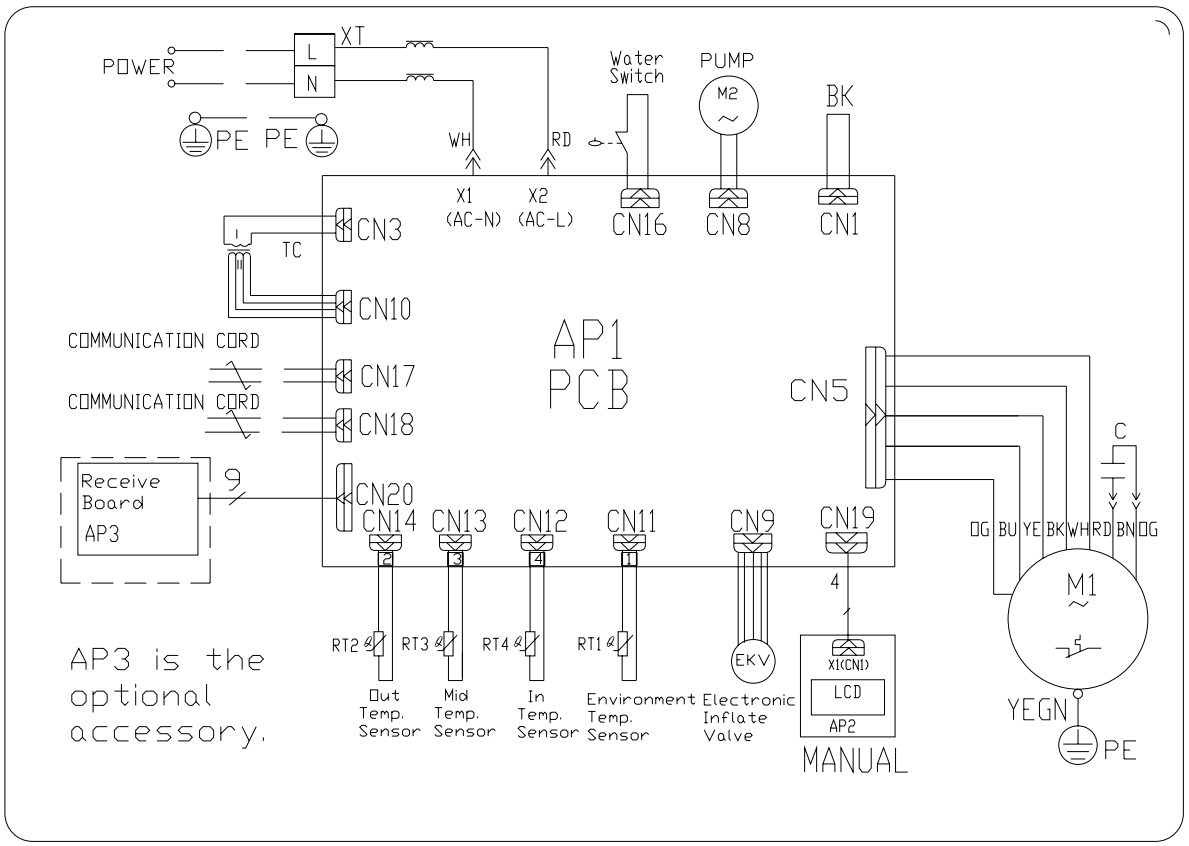
GMV-R90P/NaB-K、GMV-R112P/NaB-K、GMV-R140P/NaB-K、GMVL-R90P/NaB-K、GMVL-R112P/NaB-K、GMVL-R140P/NaB-K



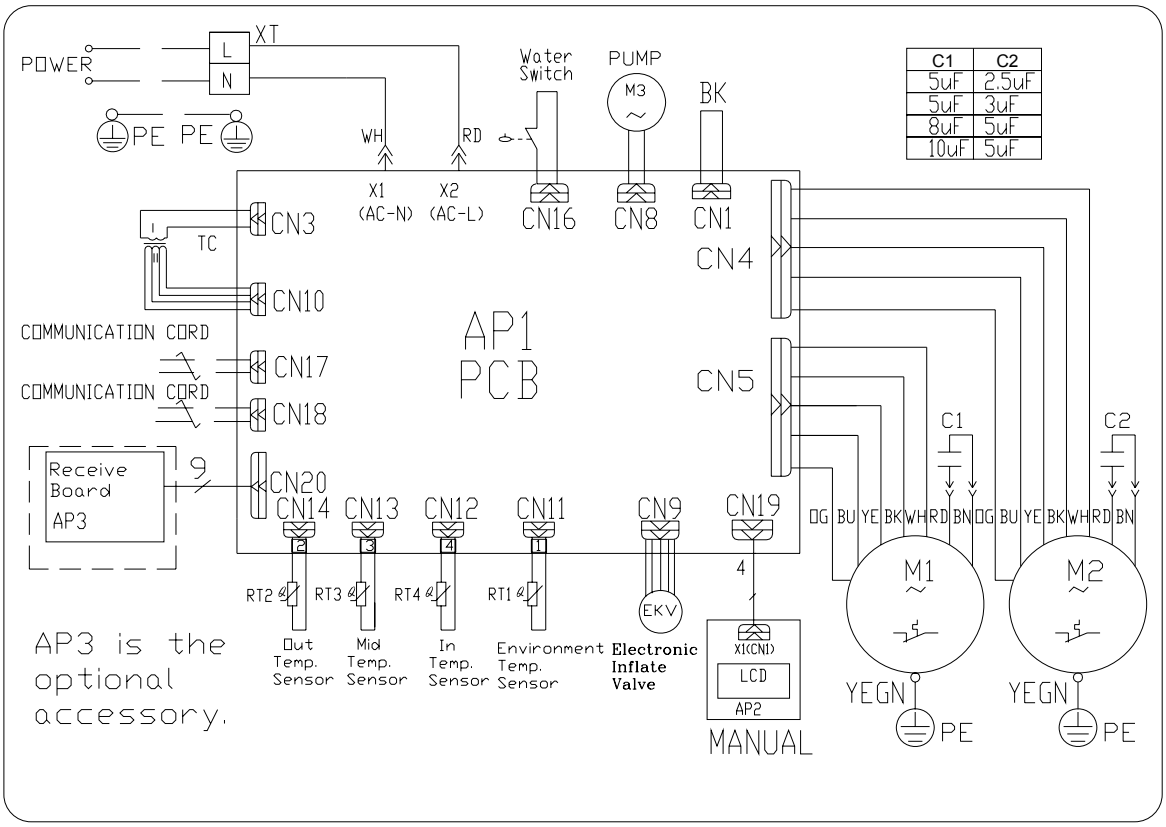
GMV-R22PS/NaB-K、GMV-R28PS/NaB-K、GMV-R36PS/NaB-K、GMVL-R22PS/NaB-K、GMVL-R28PS/NaB-K、GMVL-R36PS/NaB-K



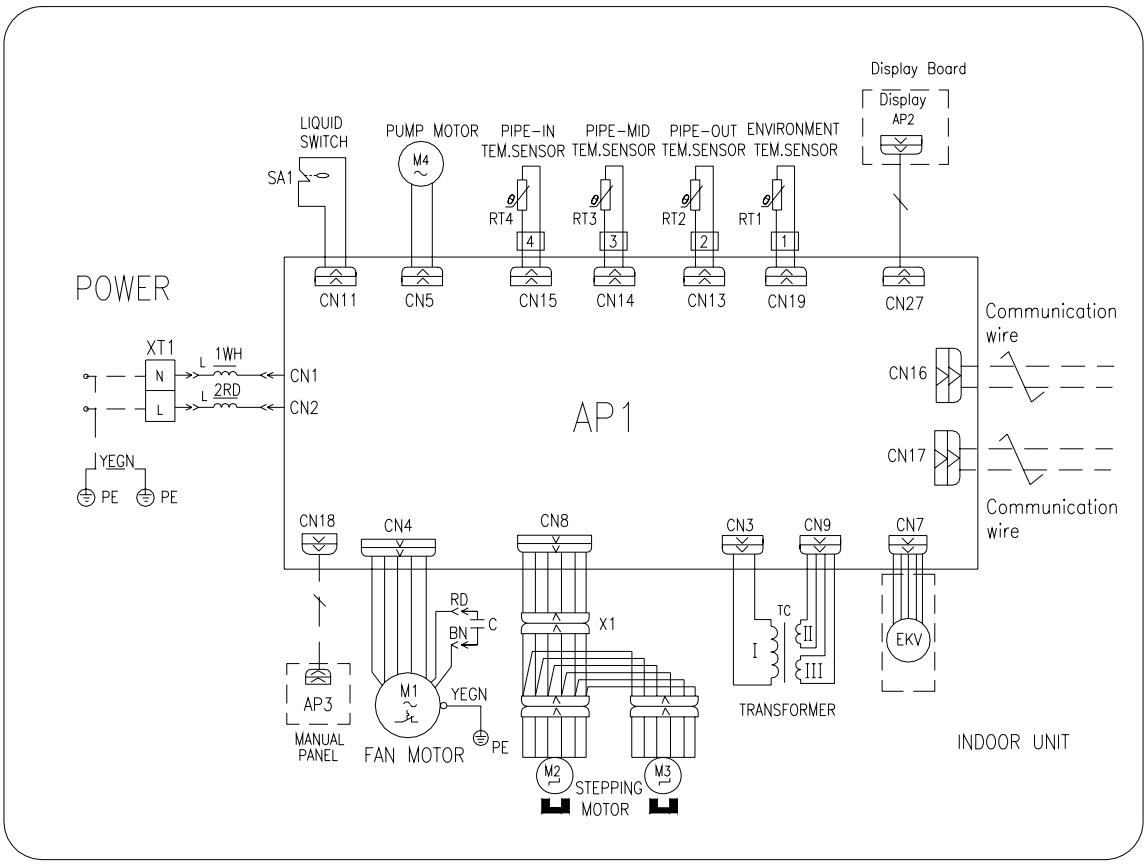
GMV-R45PS/NaB-K、GMV-R56PS/NaB-K、GMV-R71PS/NaB-K、GMVL-R45PS/NaB-K、GMVL-R56PS/NaB-K、GMVL-R71PS/NaB-K



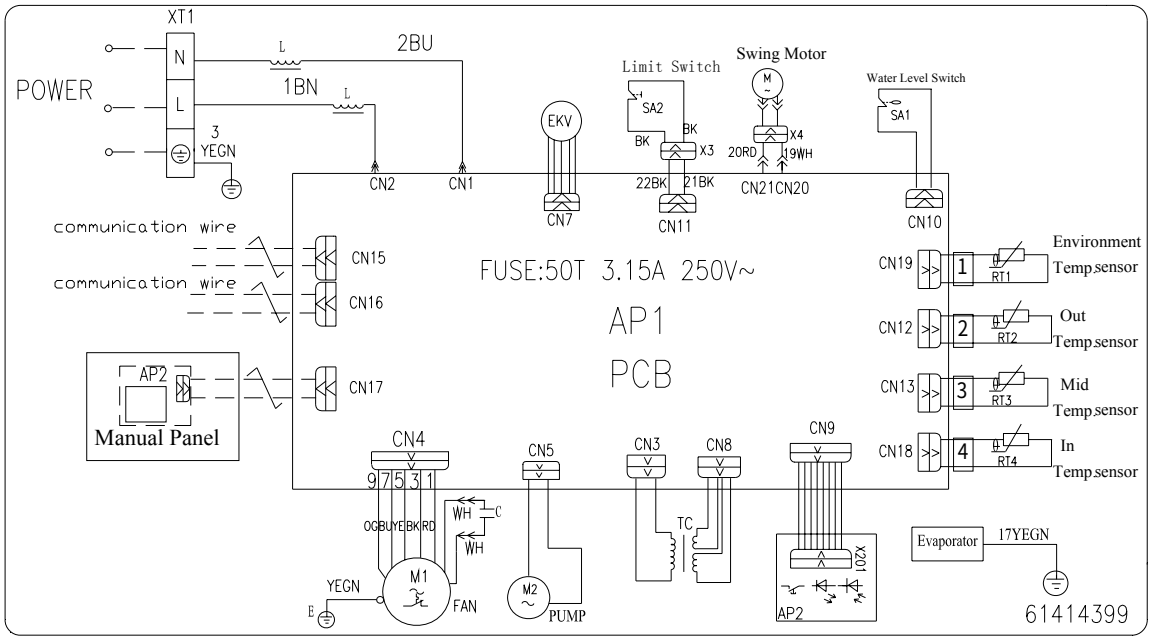
GMV-R90PS/NaB-K、GMV-R112PS/NaB-K、GMV-R140PS/NaB-K、GMVL-R90PS/NaB-K、GMVL-R112PS/NaB-K、GMVL-R140PS/NaB-K



GMV-R22T/NaA-K、GMV-R28T/NaA-K、GMV-R36T/NaA-K、GMV-R45T/NaA-K、GMVL-R22T/NaA-K、GMVL-R28T/NaA-K、GMVL-R36T/NaA-K、GMVL-R45T/NaA-K

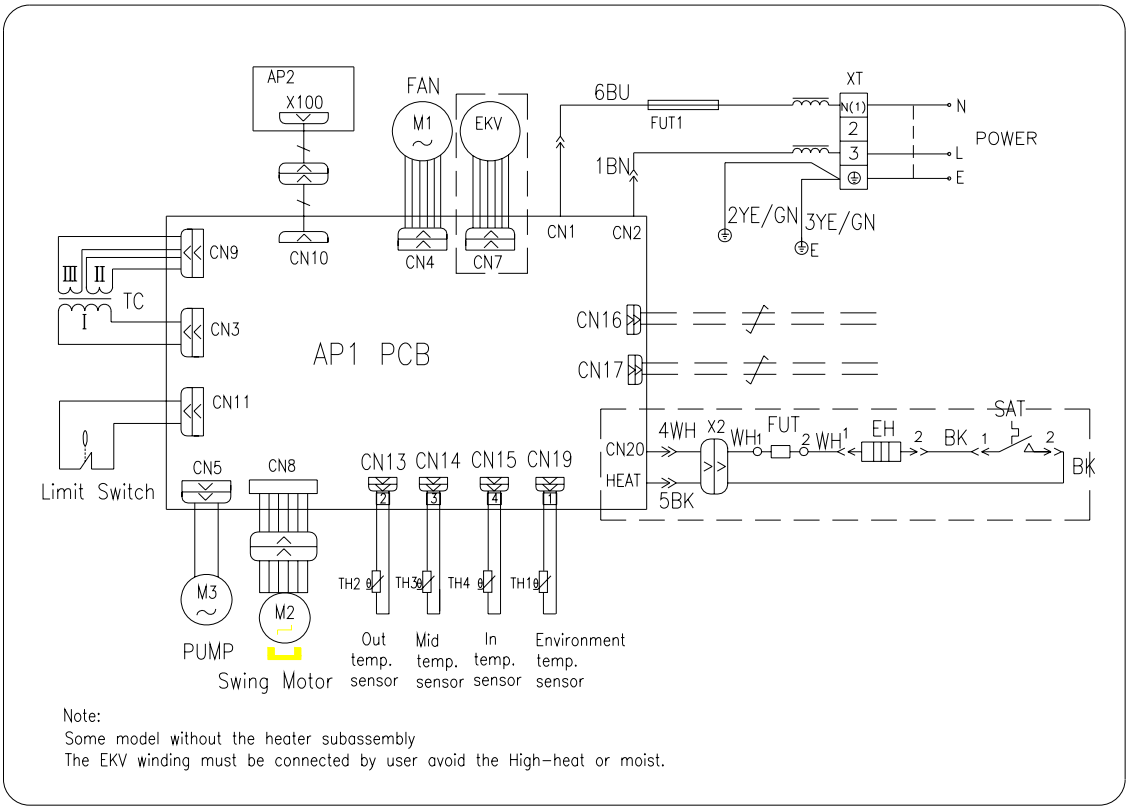


GMV-R28T/Na-K,GMV-R36T/Na-K,GMV-R45T/Na-K,GMV-R50T/Na-K,GMV-R56T/Na-K,
GMV-R63T/Na-K,GMV-R71T/Na-K,GMV-R80T/Na-K, GMV-R90T/Na-K,
GMV-R100T/Na-K,GMV-R112T/Na-K,GMV-R125T/Na-K,GMV-R140T/Na-K,
GMVL-R28T/Na-K,GMVL-R36T/Na-K,GMVL-R45T/Na-K,GMVL-R50T/Na-K,GMVL-R56T/Na-K,
GMVL-R63T/Na-K,GMVL-R71T/Na-K,GMVL-R80T/Na-K, GMVL-R90T/Na-K,
GMVL-R100T/Na-K,GMVL-R112T/Na-K,GMVL-R125T/Na-K,GMVL-R140T/Na-K

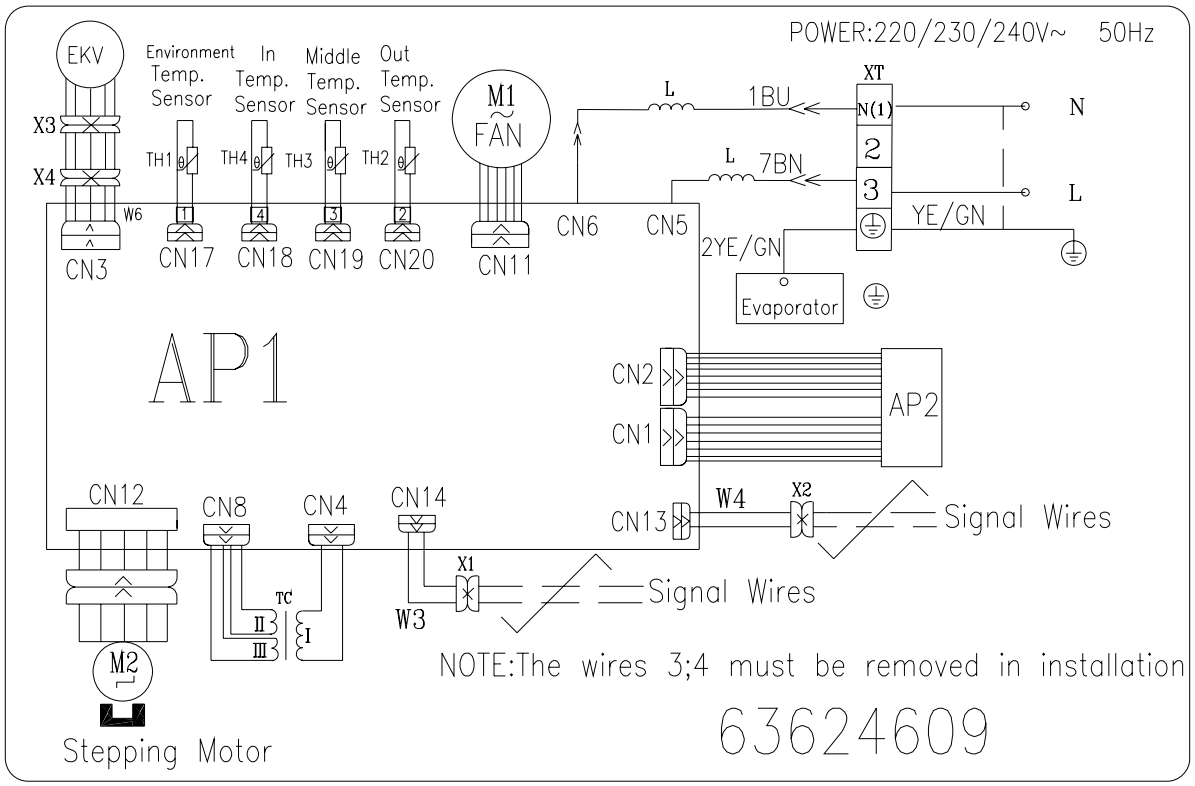


GMV-R22Td/Na-K, GMVL-R22Td/Na-K,GMV-R28Td/Na-K, GMVL-R28Td/Na-K,GMV-R36Td/Na-K，

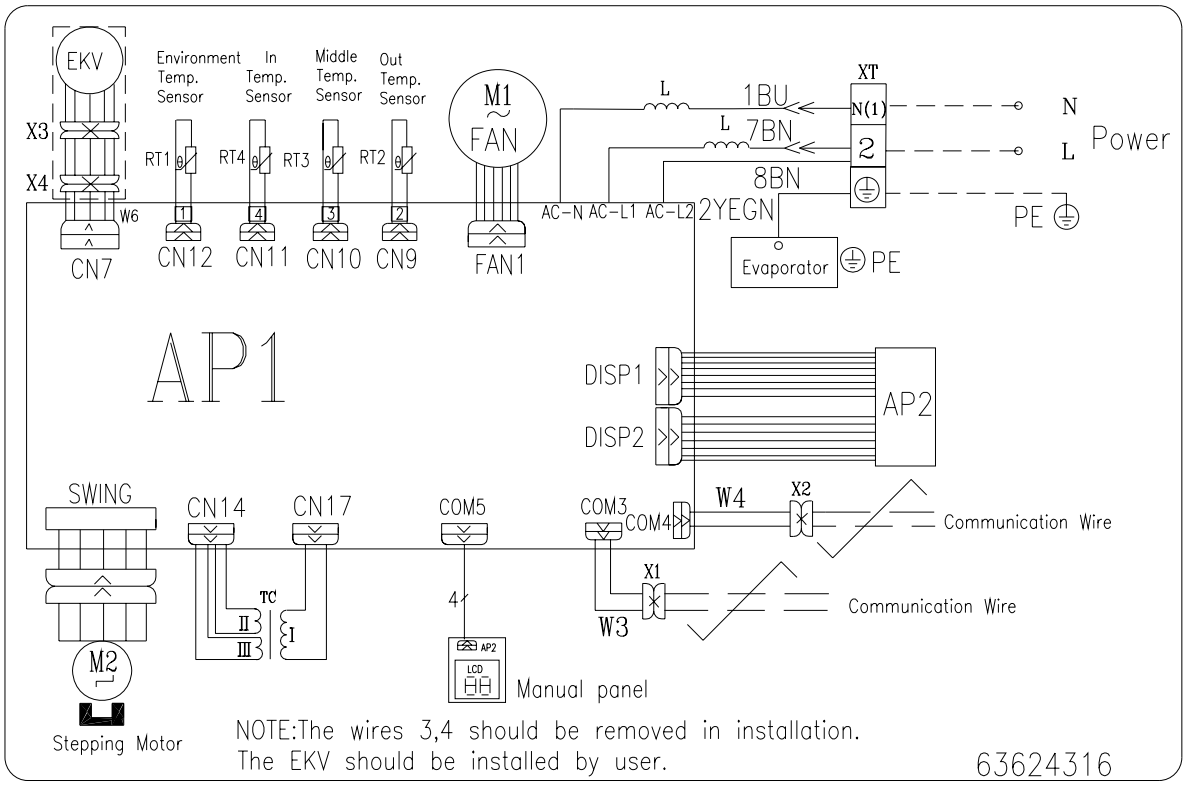
GMVL-R36Td/Na-K，



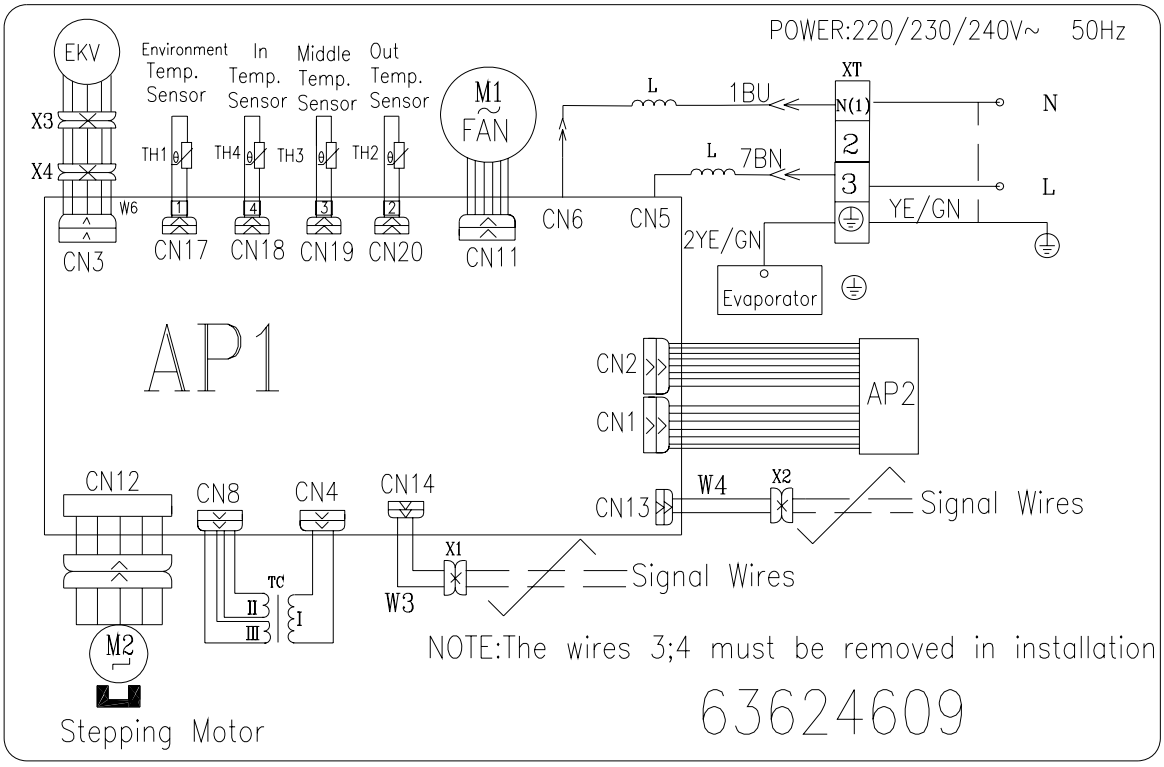
GMV-R22G/NaB-K,GMVL-R22G/NaB-K,GMV-R28G/NaB-K,GMVL-R28G/NaB-K,GMV-R36G/NaB-K,GMVL-R36G/NaB-K,GMV-R45G/NaB-K,GMVL-R45G/NaB-K



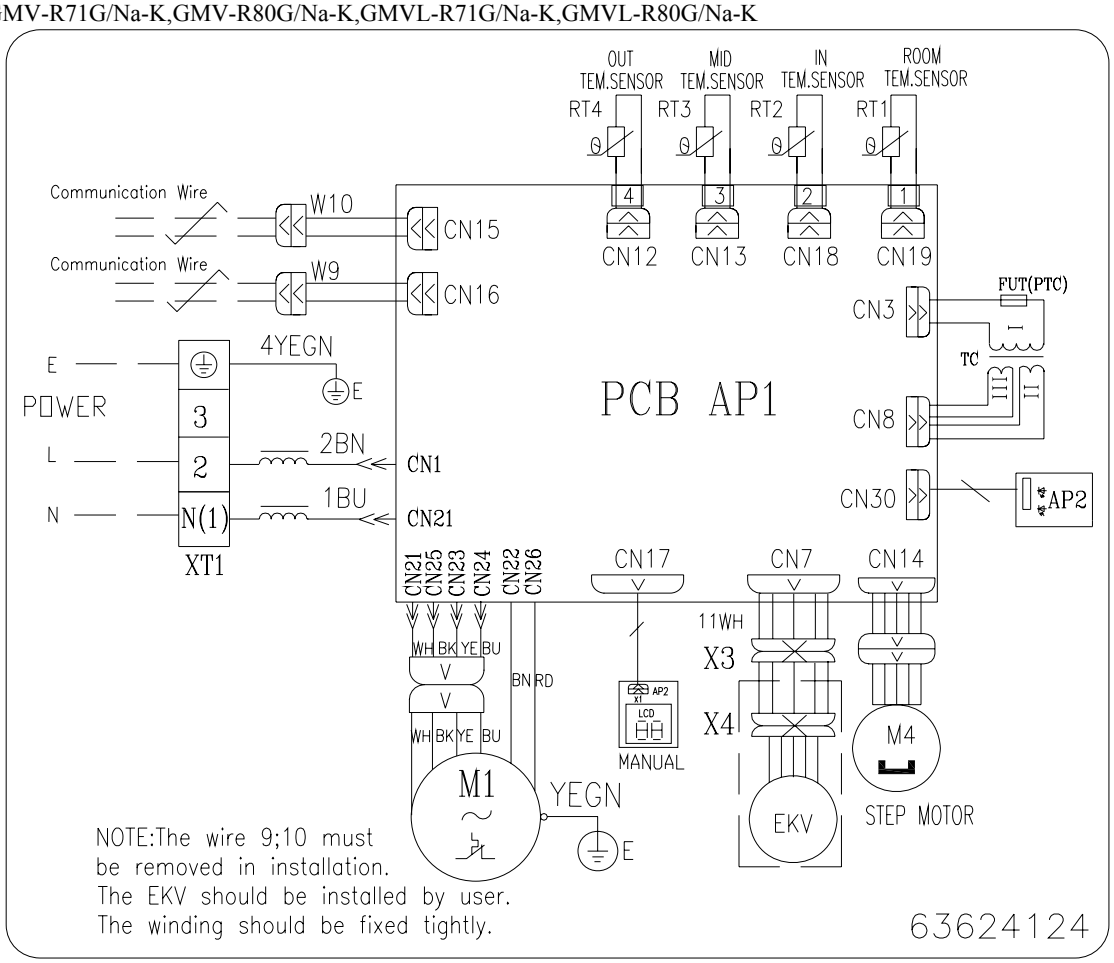
GMV-R50G/NaB-K,GMV-R56G/NaB-K,GMVL-R50G/NaB-K,GMVL-R56G/NaB-K



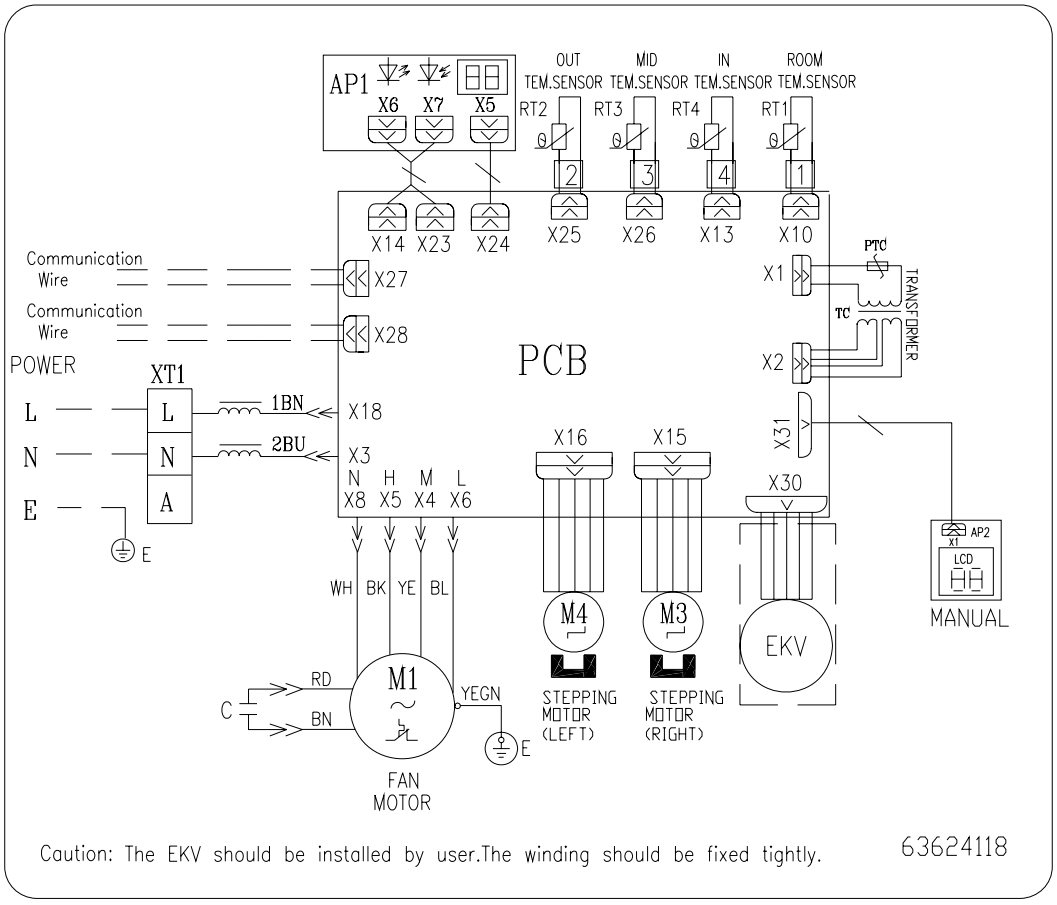
GMV-R22G/NaC-K,GMV-R28G/NaC-K ,GMV-R36G/NaC-K,GMV-R45G/NaC-K,GMVL-R22G/NaC-K,GMVL-R28G/NaC-K ,GMVL-R36G/NaC-K,GMVL-R45G/NaC-K



GMV-R71G/Na-K,GMV-R80G/Na-K,GMVL-R71G/Na-K,GMVL-R80G/Na-K

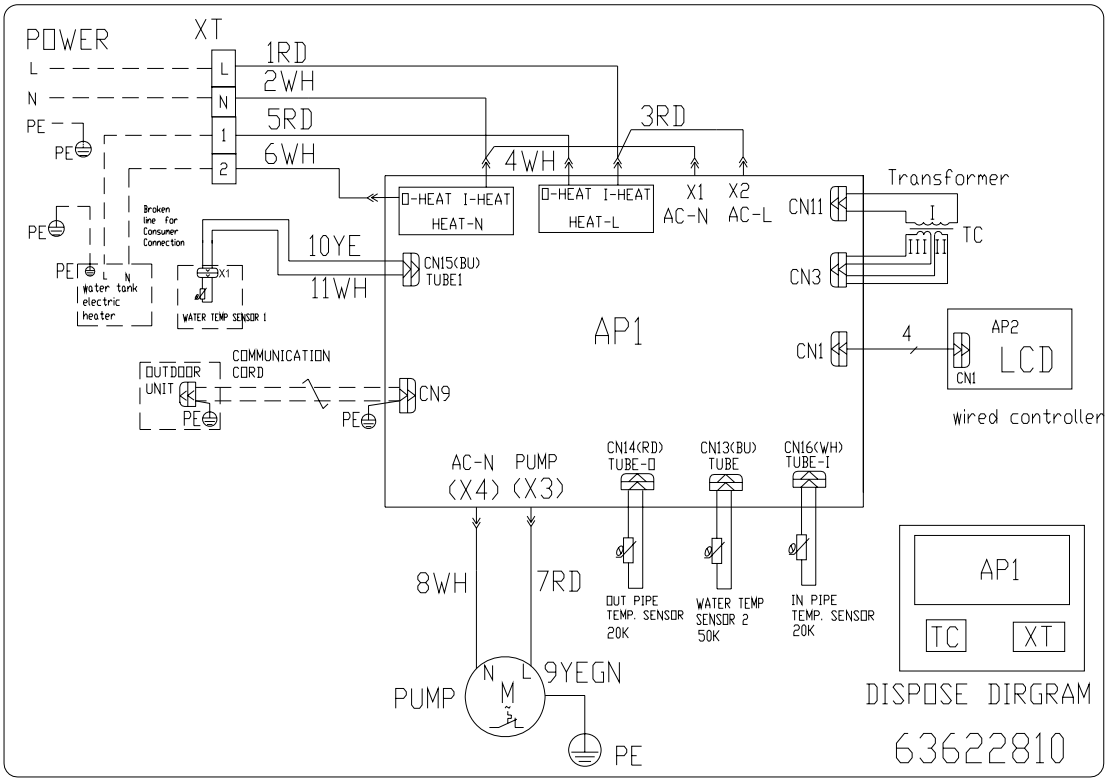


GMV-R28Zd/Na-K,GMV-R36Zd/Na-K,GMV-R50Zd/Na-K,GMV-R71Zd/Na-K,GMV-R90Zd/Na-K,GMV-R112Zd/Na-K,GMV-R125Zd/Na-K,GMVL-R28Zd/Na-K,GMVL-R36Zd/Na-K,GMVL-R50Zd/Na-K,GMVL-R71Zd/Na-K,GMVL-R90Zd/Na-K,GMVL-R112Zd/Na-K,GMVL-R125Zd/Na-K

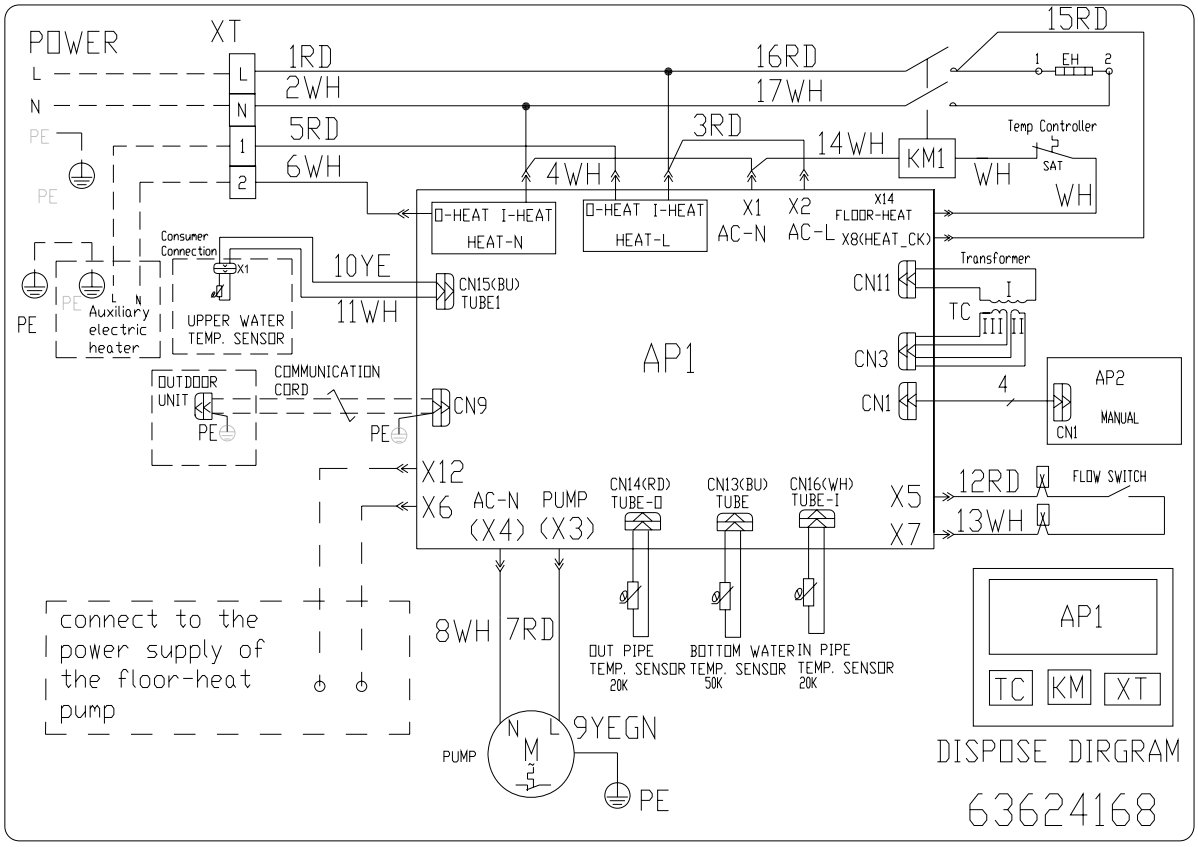


3.2.3 Circuit Diagram of Hydro-box

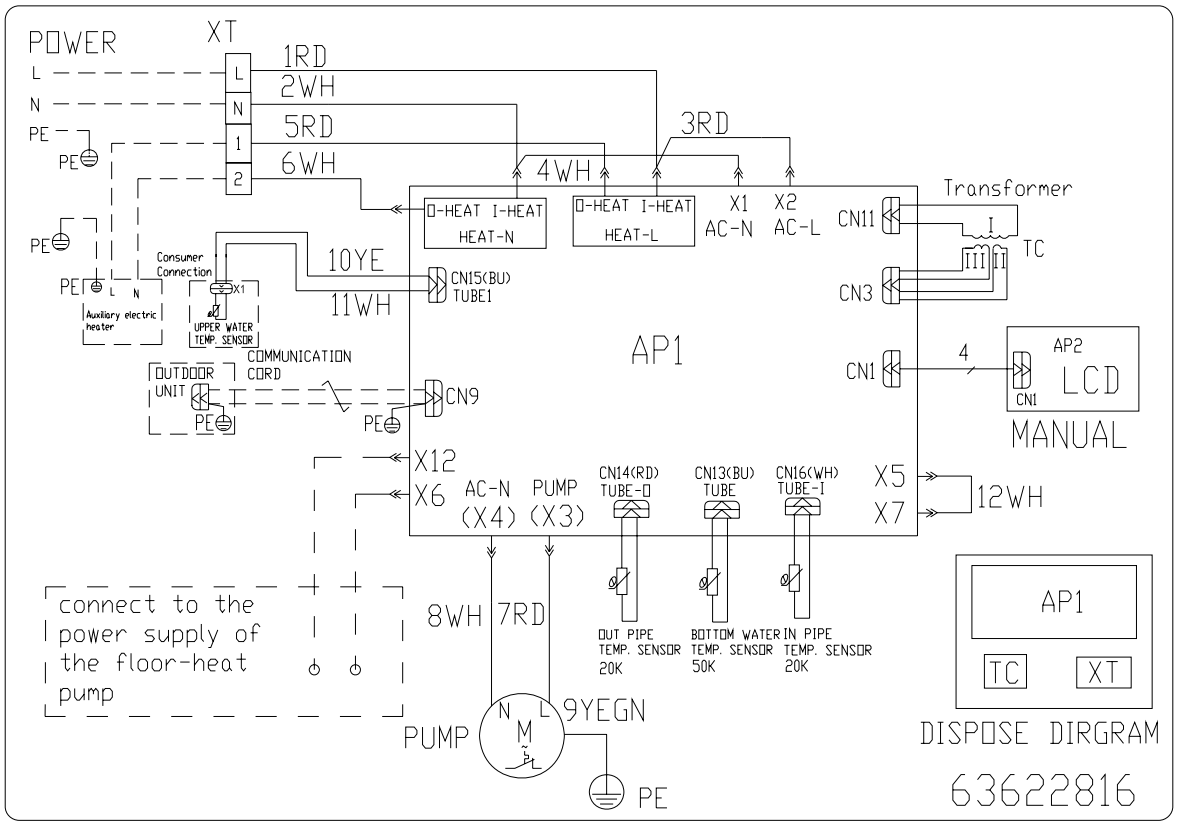
RQD5GA-K.RQD8GA-K



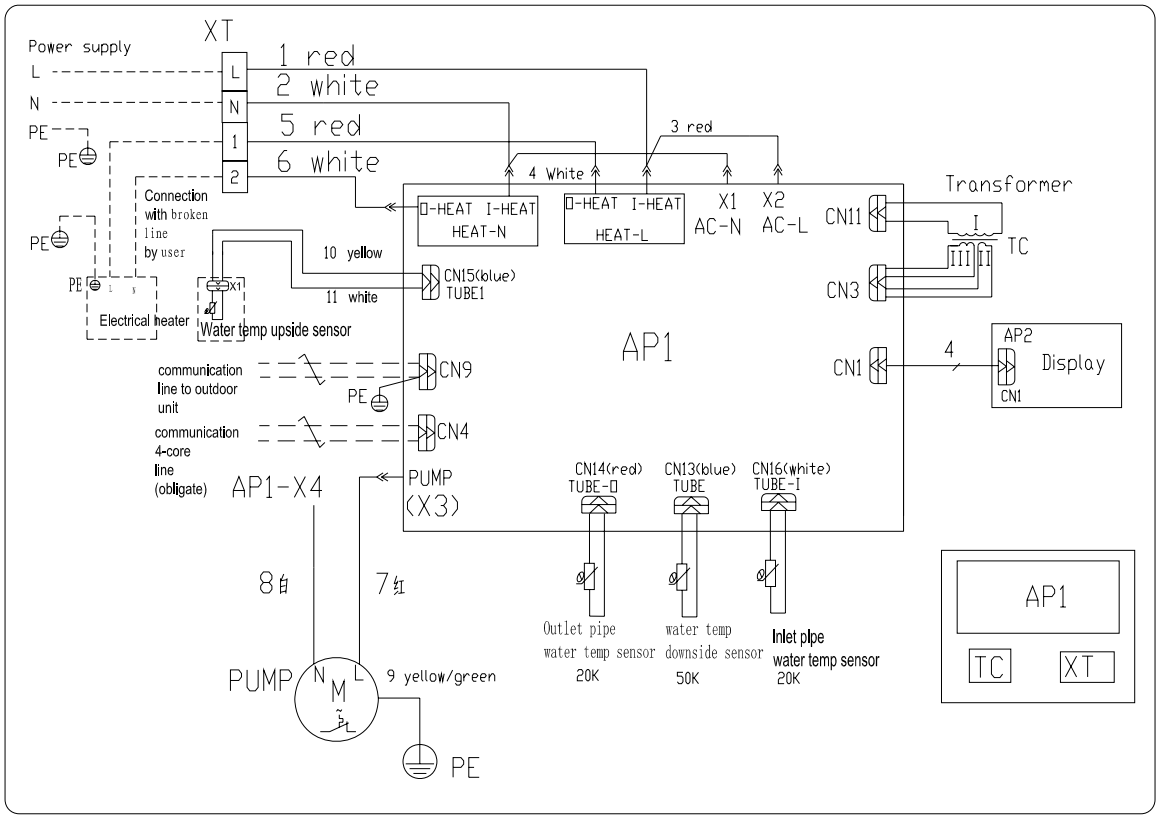
RQD5GB-K.RQD8GB-K



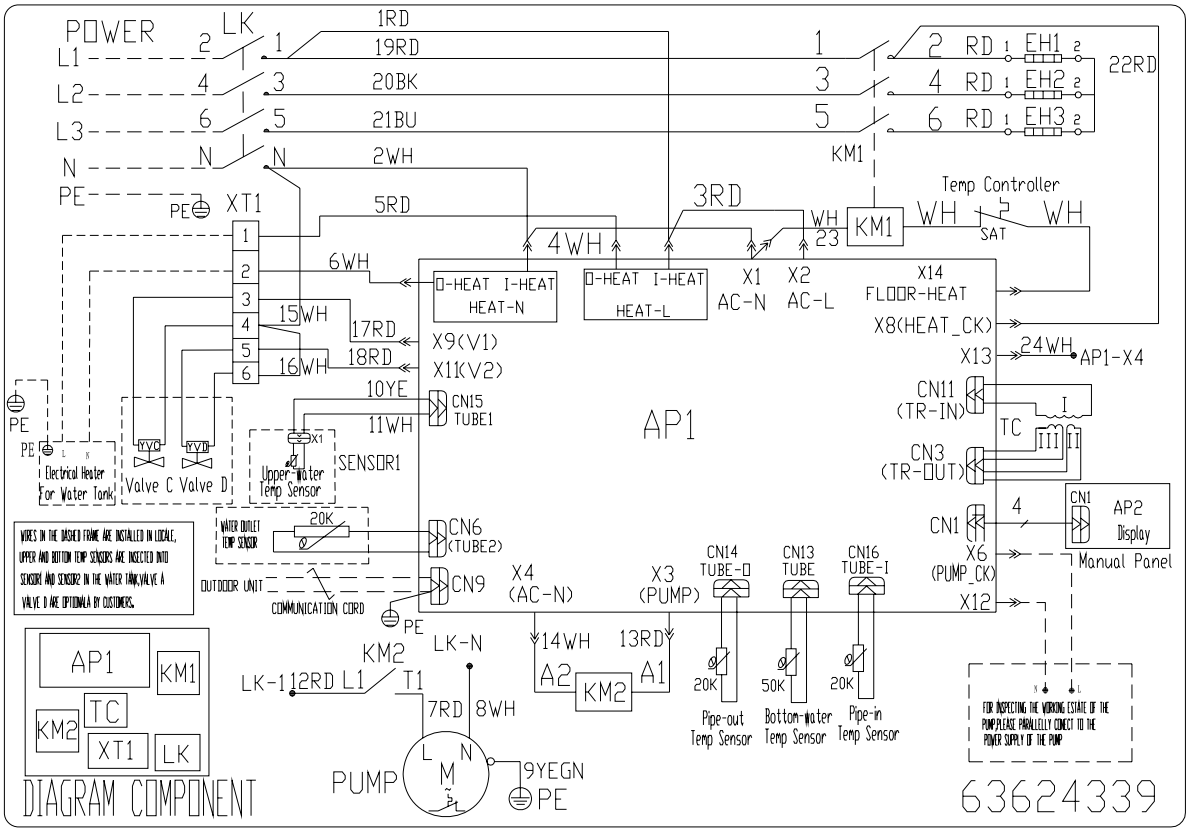
RQ5GB-K.RQ8GB-K



RQ30LA-K.RQ20LA-K:



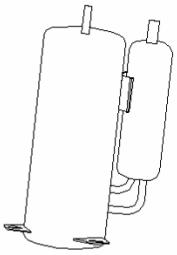
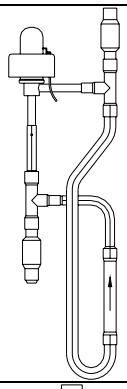
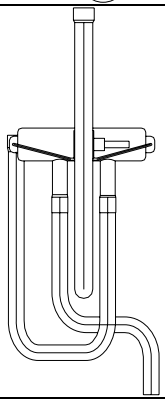
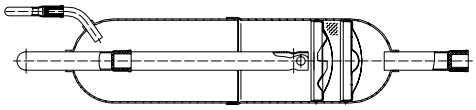
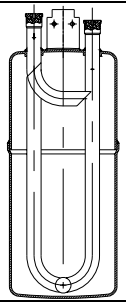
RQD30LA-M.RQD20LA-M:

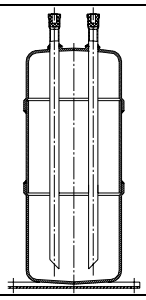
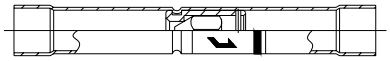
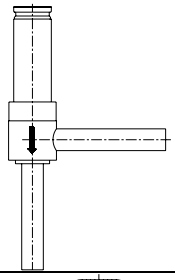
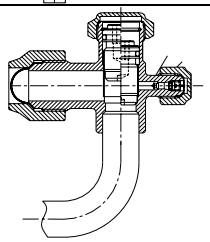
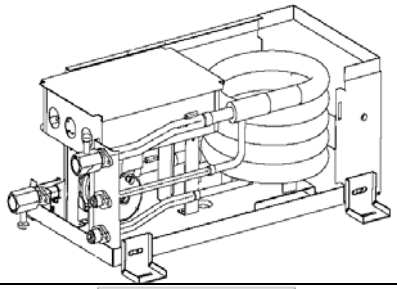
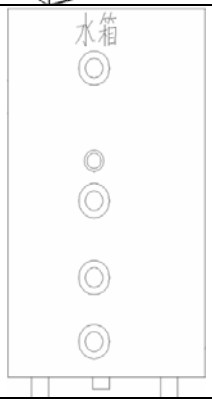


4 DISASSEMBLY AND ASSEMBLY PROCEDURE OF MAIN PARTS

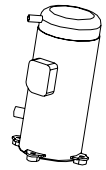
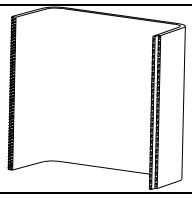
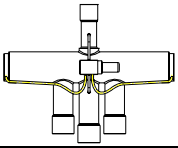
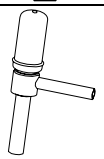
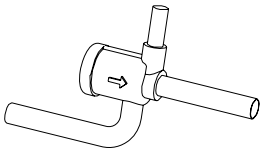
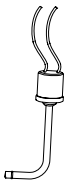
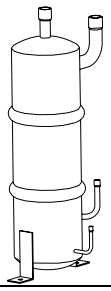
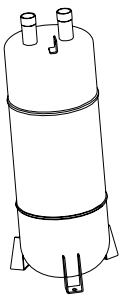
4.1 Introduction of Main Parts

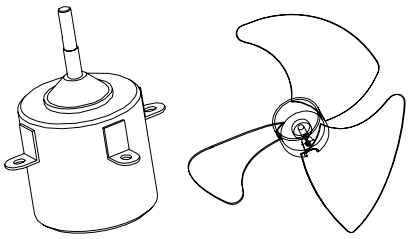
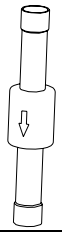
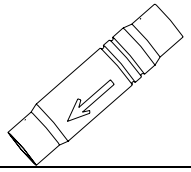
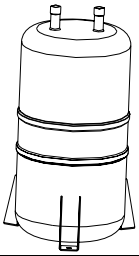
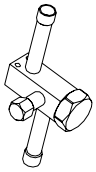
GMV-Pds100W/Na-K.GMV-Pds120W/Na-K.GMV-Pds140W/Na-K.GMV-Pds160W/Na-K.RQD5GA-K.RQD8GA-K

Illustration	Name	Function
	Compressor	It is key part of air conditioner which inhales the gas with low temp and low pressure, then compress it to be the gas with high temp and high pressure and finally discharge it.
	Electric expansion valve	It is throttling gear which turn the high pressure and liquid refrigerants to be low temperature vapor
	4-way valve	It can change the flow direction of refrigerants so that the switch between cooling and heating can be realized.
	Oil separator	It is between discharge vent of compressor and inlet of condensator which separates the gas of refrigerants from lubricants of compressor.
	Gas-liquid separator	It is between outlet of condensator and suction vent of compressor which is used for separating refrigerants.

	High pressure liquid accumulator	It is used for accumulating the residual liquid of refrigerants in cooling cycle.
	One-way valve	Limit the flow direction of refrigerants.
	Electromagnetic valve	It is controlled by strong current. It is opened when it is energized and it is closed when deenergization.
	Cut-off valve	It is used for connection between indoor unit and outdoor unit as well as maintenance.
	Hydro-box	It is used for heat exchange between refrigerants and water.
	Insulated water tank	It is used for storing hot wator

GMV-Pds224W/Na-M.GMV-Pds280W/Na-M.RQD20LA-M.RQD30LA-M.RQ20LA-K.RQ30LA-K

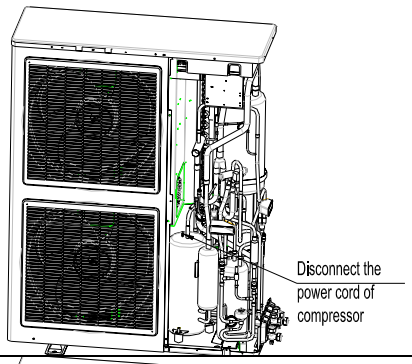
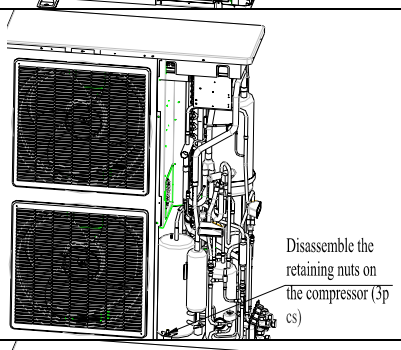
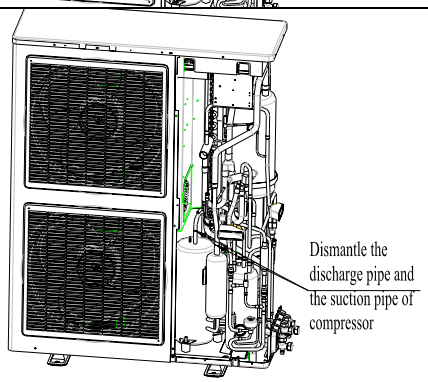
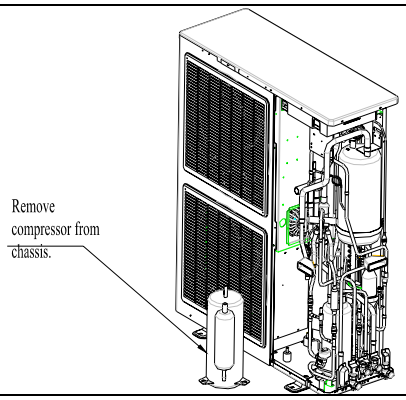
Illustration	Name	Function
	Compressor	It is key part of air conditioner which inhales the gas with low temp and low pressure, then compress it to be the gas with high temp and high pressure and finally discharge it.
	Heat Exchanger	The heat exchange between refrigerants and flowing air can be realized.
	4-way valve	改变制冷剂流向，实现制冷制热之间的转换。It can change the flow direction of refrigerants so that the switch between cooling and heating can be realized.
	Electric expansion valve	It is throttling gear which turn the high pressure and liquid refrigerants to be low temperature vapor
	Electromagnetic valve	It is controlled by strong current. It is opened when it is energized and it is closed when deenergization.
	High/low pressure switch	When the high/low pressure of the system is higher/lower than a specified value, it will work as a protection.
	Oil separator	It is between discharge vent of compressor and inlet of condensator which separates the gas of refrigerants from lubricants of compressor.
	Gas-liquid separator	It is between outlet of condensator and suction vent of compressor which is used for separating refrigerants.

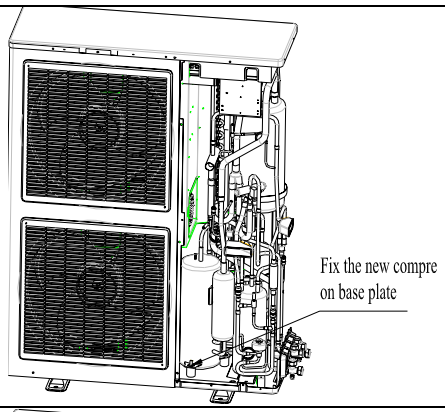
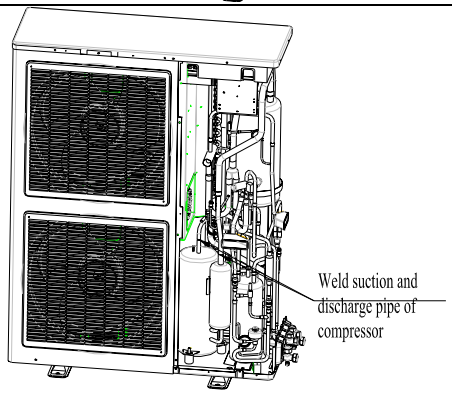
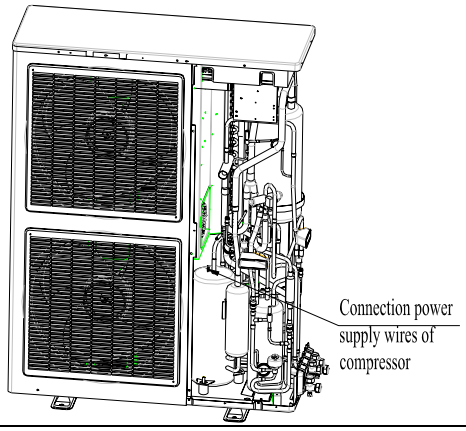
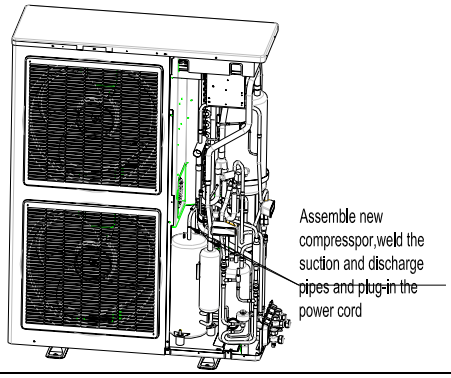
	Fan	It accelerates the flow of air for better heat exchange.
	One-way valve	Limit the flow direction of refrigerants.
	Filter	Filter the impurity of refrigerants.
	High pressure liquid accumulator	It is used for accumulating the residual liquid of refrigerants in cooling cycle.
	Cut-off valve	It is used for connection between indoor unit and outdoor unit as well as maintenance.

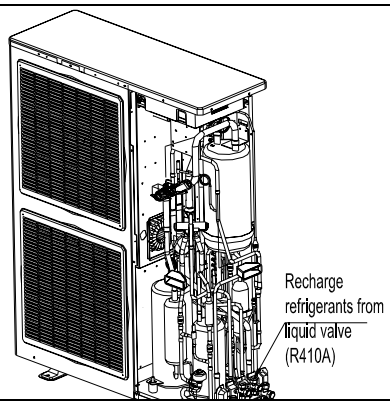
4.2 Outdoor Unit

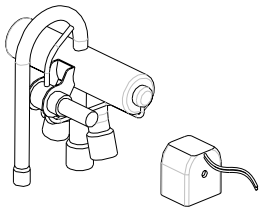
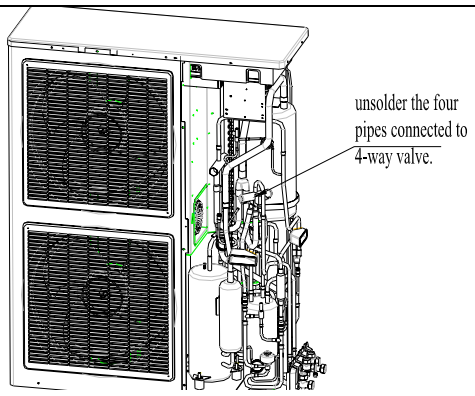
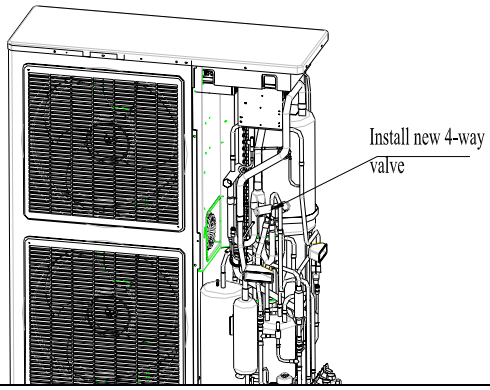
4.2.1The Uni with Side Air Outlet

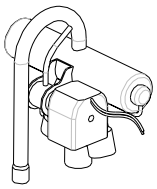
GMV-Pds100W/Na-K.GMV-Pds120W/Na-K.GMV-Pds140W/Na-K.GMV-Pds160W/Na-K

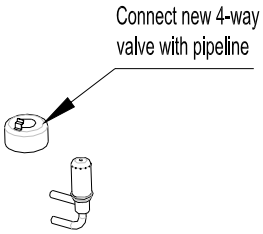
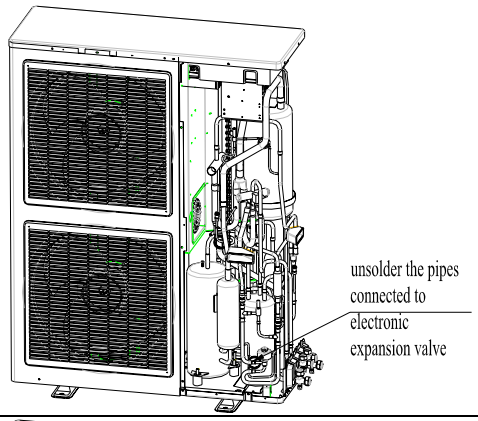
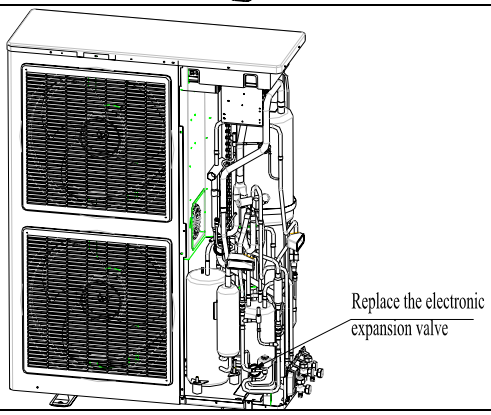
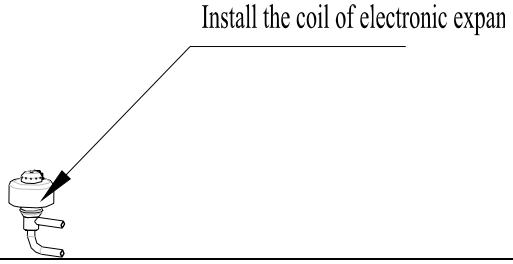
Disassembly and Assembly of Compressor		
Remarks : Make sure that there isn't any refrigerant in pipe system and the power supply is cut off before removal of the compressor.		
Step	Illustration	Handling Instruction
1. Disconnect the power cord of compressor		●Unscrew the retaining screw of power cord with screwdriver ●Unplug the power cord.
2. Disassembly of retaining nuts on compressor		●Disassemble the retaining nuts on the compressor
3. Dismantle the discharge pipe and the suction pipe of compressor		●Heat the suction and discharge pipe with gas welding before removing compressor. ●Conduct nitrogen-fill protection when welding and the pressure of nitrogen is 0.5±0.1kgf/cm²(relative pressure) ●Heating with caution in case the surroundings get burning due to high temperature.
4. Remove compressor		●Remove compressor from chassis.

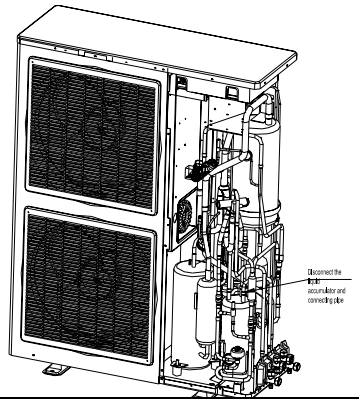
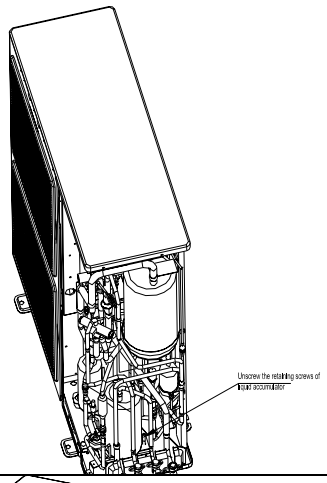
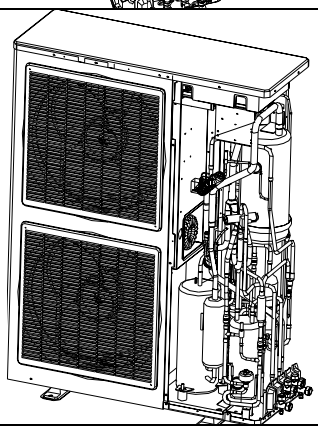
5Fix the new compressor on base plate		●Position accurately the new compressor. ●Screw down fixing nuts for compressor with wrench. ●Do not up-side-down compressor during assembly.
6. Connection of suction and discharge pipe with pipeline system		●Weld the suction and discharge pipe with gas welding ●Provide nitrogen protection during gas welding and the nitrogen pressure should be 0.5±0.1kgf/cm^2（relative pressure） ●Please pay attention to heating in case that surrounding materials should be burnt by high temperature.
7. Connection power supply wires of compressor		●Assemble the power supply wires onto right position according to the order of disassembly. ●Screw down the retaining screw for the power supply wires with screwdriver.
8. Vacuumization by fluorin-feeding nozzle		●Vacuumize the system by fluorin-feeding nozzle

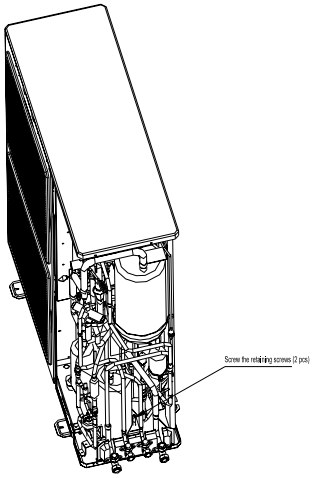
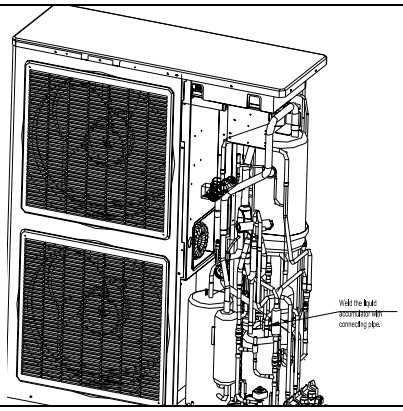
9．Recharge refrigerants by fluorin-feeding nozzle		●Recharge refrigerants to the system by fluorin-feeding nozzle ●Volume of refilling should be in accordance with the requirement on the unit nameplate.

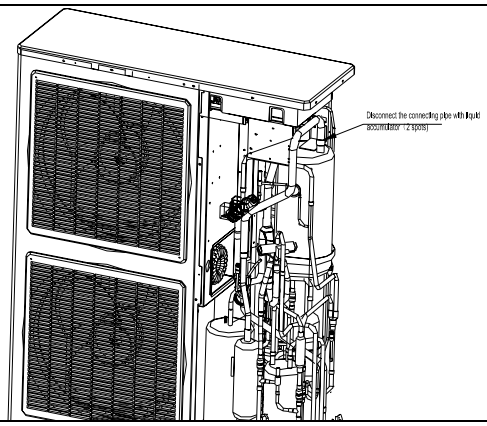
Disassembly and Assembly of 4-way valve		
Remarks：Make sure that there isn't any refrigerant in pipe system and the power supply is cut off before removal of 4-way valve.		
Step	Illustration	Handling Instruction
1．Remove the coil of 4-way valve		●Use screwdriver to remove the screws fixing the coil ●Remove the coil of 4-way valve.
2．Use welding gun to unsolder the four pipes connected to 4-way valve.		●Heat connection pipes for 4 pipes of 4-way valve with gas welding before removal of 4-way valve. ●Provide nitrogen protection during gas welding and the nitrogen pressure should be 0.5±0.1kgf/cm^2（relative pressure） ●Please pay attention to heating in case that surrounding materials should be burnt by high temperature.
3．Install new 4-way valve		●Wrap the valve with wet cloth ●Reweld the pipes connected to 4-way valve

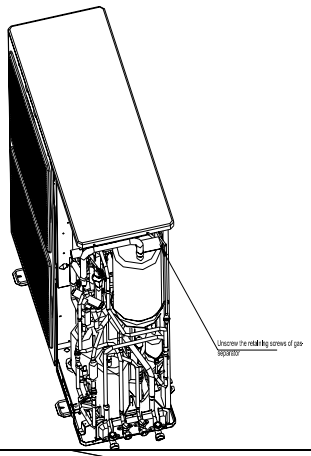
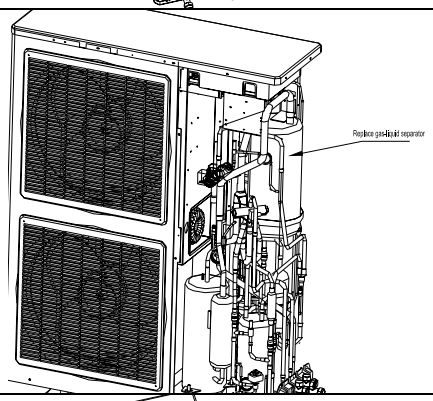
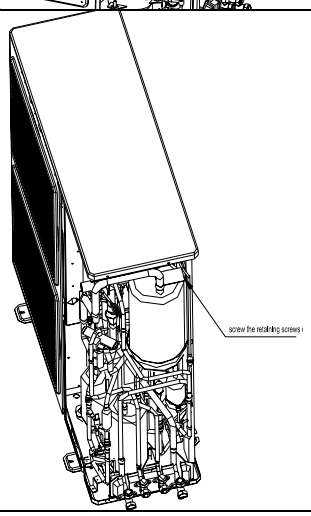
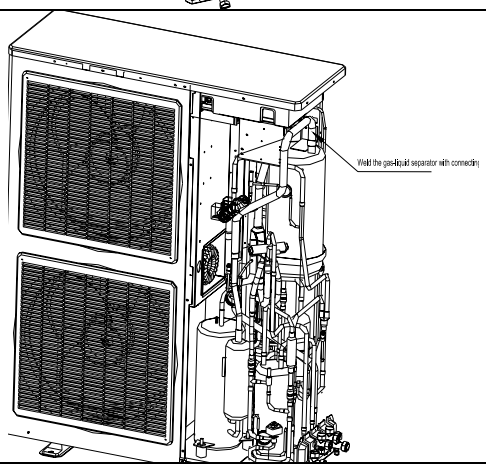
4. Install the coil of 4-way valve		●Place the coil of 4-way valve correctly. ●Tighten the screws with screwdriver.

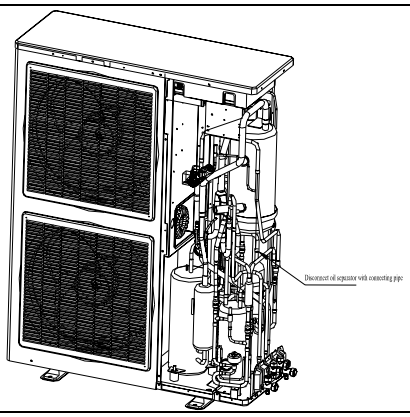
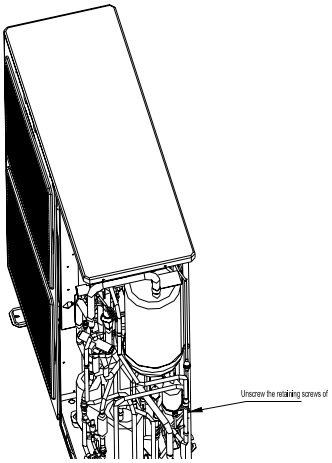
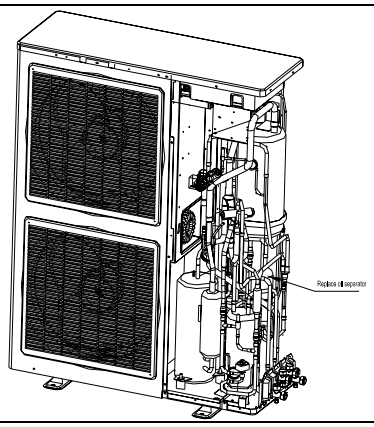
Disassembly and Assembly of electronic expansion valve		
Remarks：Make sure that there isn't any refrigerant in pipe system and the power supply is cut off before removal of electronic expansion valve		
Step	Illustration	Handling Instruction
1. Remove the coil of electronic expansion valve		●Remove the coil of electronic expansion valve and place it away from fire
2. Use welding gun to unsolder the pipes connected to electronic expansion valve		●Use welding gun to unsolder the pipes connected to electronic expansion valve ●Provide nitrogen protection during gas welding and the nitrogen pressure should be 0.5±0.1kgf/cm^2 （relative pressure） ●Please pay attention to heating in case that surrounding materials should be burnt by high temperature.
3. Replace the electronic expansion valve		●Wrap the valve with wet cloth ●Reweld the pipes connected to electronic expansion valve
4. Install the coil of electronic expansion valve		●Install the coil of electronic expansion valve

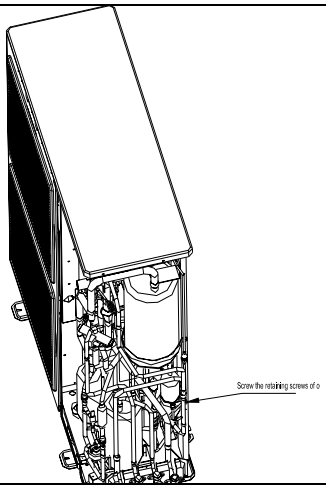
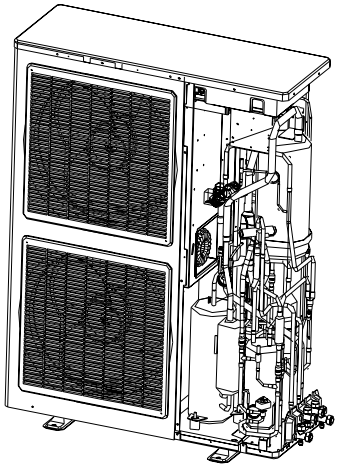
Disassembly and Assembly of Liquid Accumulator		
Remarks：Make sure that there isn't any refrigerant in pipe system and the power supply is cut off before removal of the liquid accumulator		
Step	Illustration	Handling Instruction
1. Disconnect the liquid accumulator with connecting pipe		● Unsolder the 3 connection spots on liquid accumulator and unplug the connecting pipe Note: keep the fire away from other components
2. Unscrew the retainin screws of liquid accumulator		● Unscrew the retainin screws of liquid accumulator
3 . Replace liquid accumulator		● Replace liquid accumulator

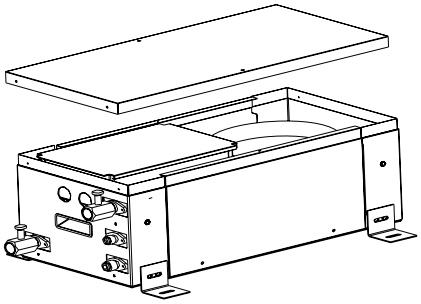
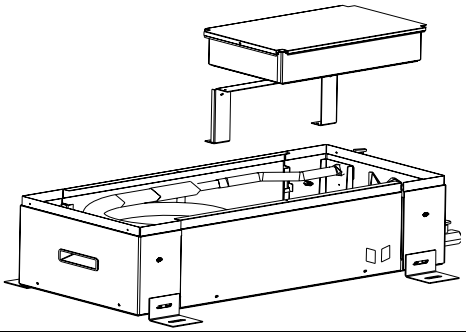
4．Screw retaining screws of liquid accumulator		●Screw retaining screws of liquid accumulator
5．Weld the liquid accumulator with connecting pipe.		● Connect the liquid accumulator and connecting pipe Note: keep the fire away from other components when welding.

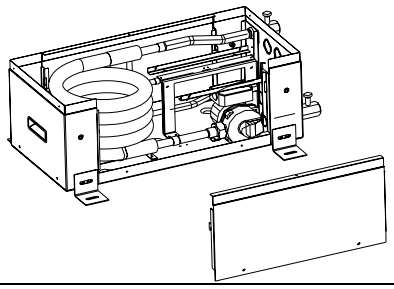
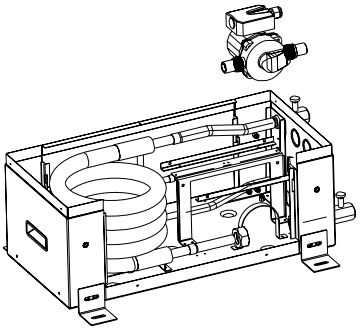
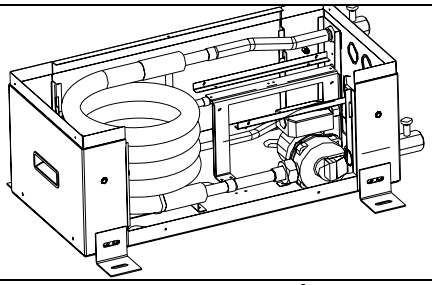
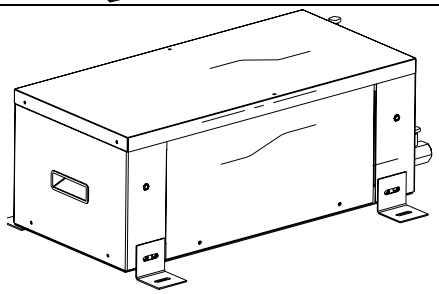
Disassembly and Assembly of Gas-Liquid Separator		
Remarks：Make sure that there isn't any refrigerant in pipe system and the power supply is cut off before removal of the gas liquid separator.		
Step	Illustration	Handling Instruction
1. Disassembly of gas liquid separator		●Unsolder two spots on gas-liquid separator and then unplug connecting pipe Note: keep the fire away from other components when welding.

2 . Unscrew the retaining screws of gas-liquid separator		● Unscrew the retaining screws of gas-liquid separator
3 . Replace gas-liquid separator		● Replace gas-liquid separator ● Prevent the gas-liquid separator from dropping. ● Don't damage the other components.
4 . Screw the retaining screws of gas-liquid separator		●Screw the retaining screws of gas-liquid separator
5 . Weld the gas-liquid separator with connecting pipe		● Weld the gas-liquid separator with connecting pipe Note: keep the fire away from other components when welding.

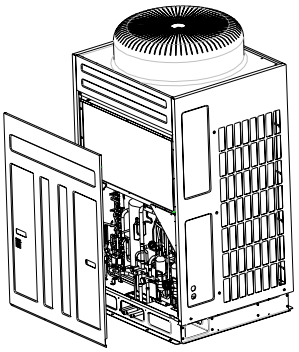
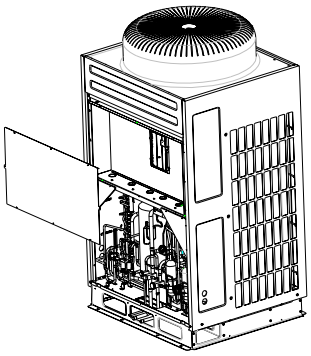
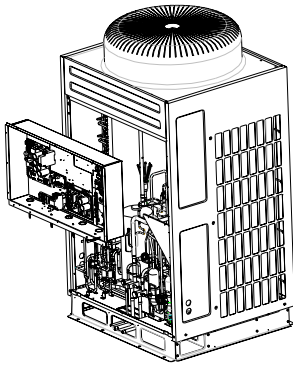
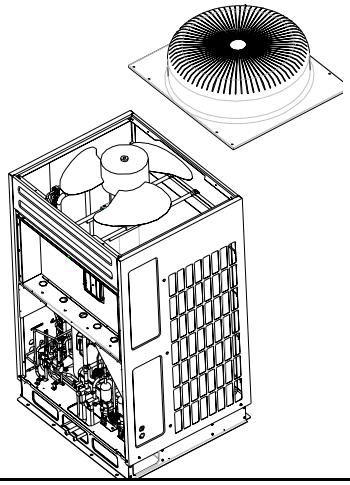
Disassembly and Assembly of Oil Separator		
Remarks：Make sure that there isn't any refrigerant in pipe system and the power supply is cut off before removal of the oil separator.		
Step	Illustration	Handling Instruction
1. Disconnect oil separator with connecting pipe		● Unsolder three spots connecting oil separator and unplug the connecting pipe. Note: keep the fire away from other components when welding.
2．Unscrew the retaining screws of oil separator		● Unscrew the retaining screws of oil separator
3．Replace oil separator		●Replace oil separator

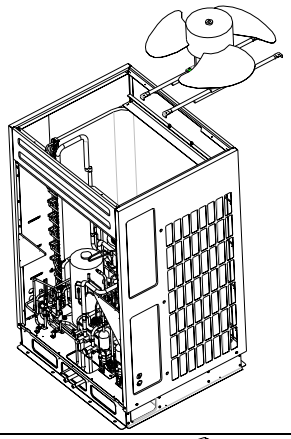
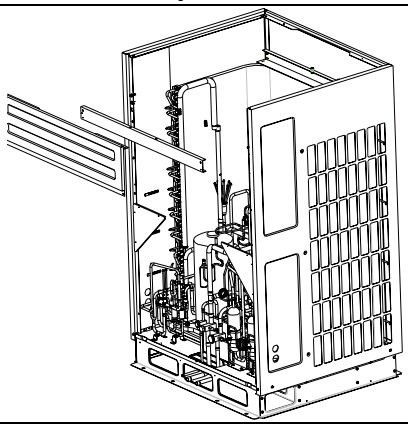
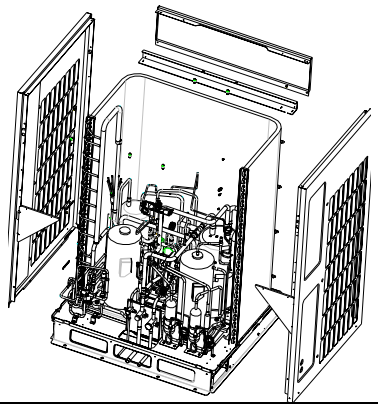
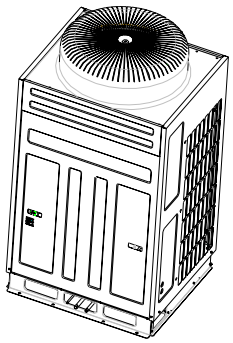
4 . Screw the retaining screws of oil separator		●Screw the retaining screws of oil separator
5 . Weld the oil separator with connecting pipe		●Weld the oil separator with connecting pipe. Note: keep the fire away from other components when welding.

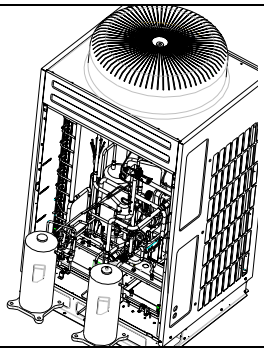
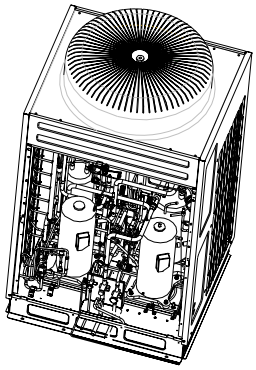
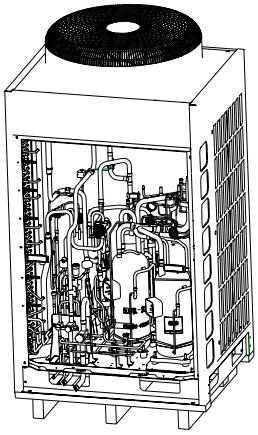
Disassembly and Assembly of Water Pump of Hydro-box		
Remarks：Make sure that there isn't any refrigerant and water in pipe system and the power supply is cut off before removal of hydro-box.The steps can be adjusted according to the practical situation		
Step	Illustration	Handling Instruction
1. Remove the top cover of hydro-box		● Unscrew the bolts and remove hydro-box ●Hold the top cover
2. Remove the electric box and one support of electric box		● Unscrew the bolts to remove electric box of hydro-box and its supports ● Prevent them from dropping off

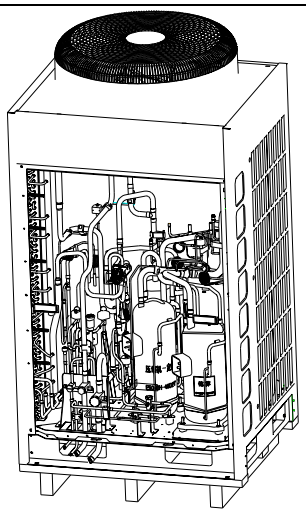
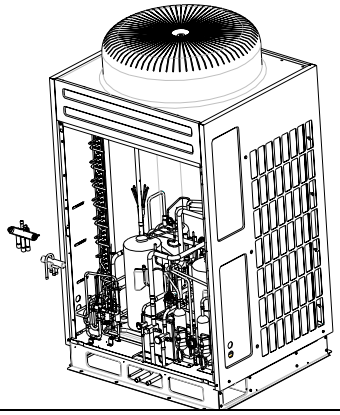
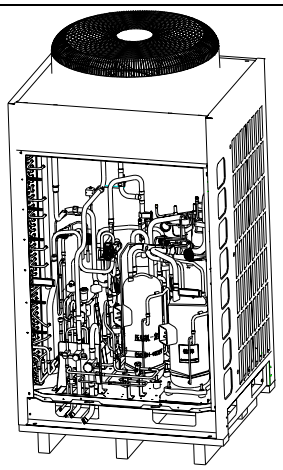
3. The removal of side plate shall be based on practical situation.		● When the unit is in suspension setting, remove the side plate for convenience of servicing.
4. Unscrew the nuts on both ends of water pump to remove it.		● Unscrew the nuts by spanner.
5. Install a new water pump and screw the nuts.		●Install a new water pump and screw the nuts.
6. Assemble the electric box, its support and the side plate.		●Assemble the electric box, its support and the side plate.

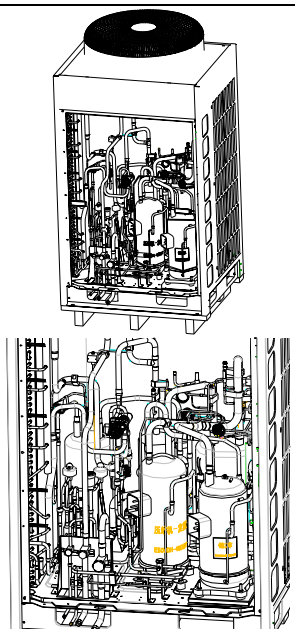
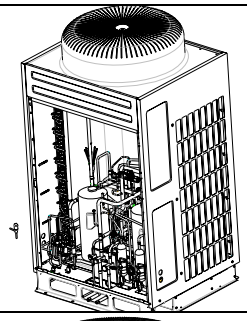
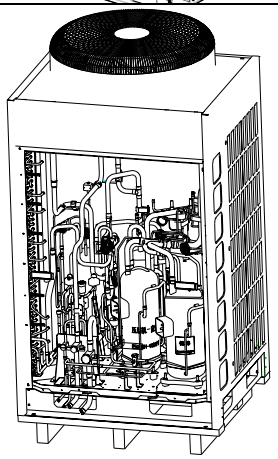
4.2.2The Unit with Top Air Outlet GMV-Pds224W/Na-M.GMV-Pds280W/Na-M

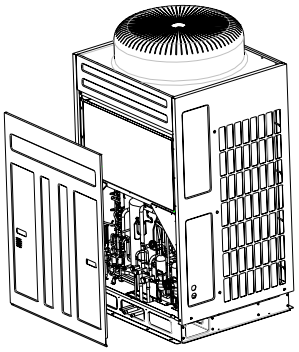
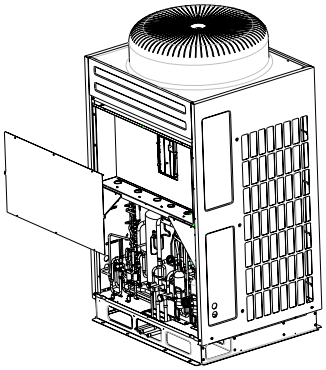
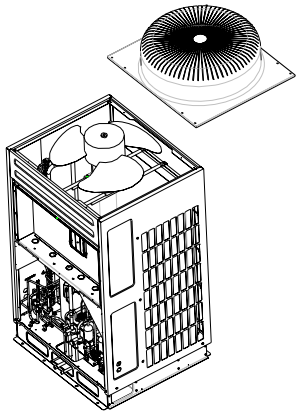
Disassembly and Assembly of External Casing		
Remark :		
Step	Illustration	Handling Instruction
1. Disassembly of the front plate		①Unscrew the bolts. ②Remove the front plate
2. Disassembly of the cover of electric box		①Unscrew srcews. ②Remove cover of electric box
3. Disassemble electric box		①Unplug each power cord and communication wire from mainboard. ②Unscrew bolts. ③Disassemble electric box
4. Disassemble dome		①Unscrew bolts ②Remove dome.

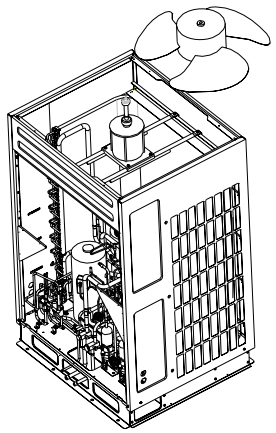
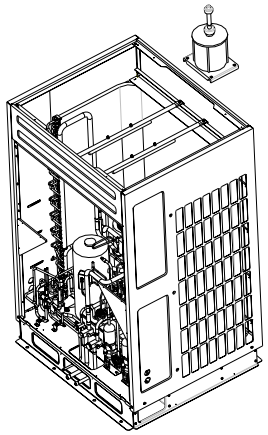
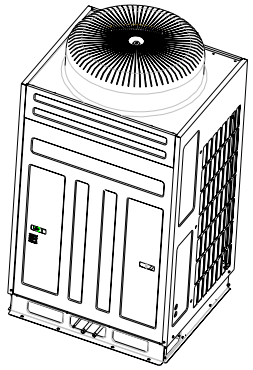
4. Disassemble fan assy.		①Unscrew bolts ②Remove fan assy.
5. Disassemble front plate 1 and front lining board sub-assy		①Unscrew the bolts ②Remove front plate 1 ③Disassemble bolts ④ Remove the front lining board sub-assy.
5. Disassemble left side plate, right side plate, rear lining board sub-assy and rear cover plate.		①Unscrew bolts. ②Remove left side plate and right side plate. ③Remove the bolts of rear lining board sub-assy and rear cover plate. ④Remove rear lining board sub-assy and rear cover plate.
7. Assemble the unit by reversed steps		●Assemble the unit by reversed steps and inspect it.

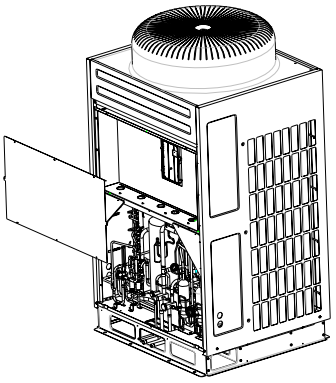
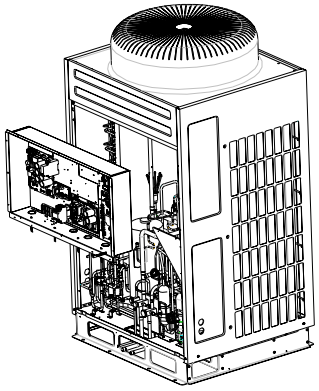
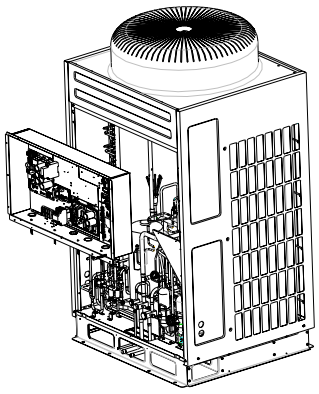
Disassembly and Assembly of Compressor		
Remarks : Make sure there isn't any refrigerant in pipe system and the power supply is cut off before removal of the compressor..		
Step	Illustration	Handling Instruction
1. Disconnect the electrical source wire		①Relax the screws with the screwdriver. ②Draw out the electrical source wire Note:Earmark the colour of wire corresponding to the terminal when Removing the wire , the mistakes can be avoided when renewing the wire connection.
2.Take down the compressor from the bottom pan.		① Disassemble the bolts of cpmpressor ②Remove the compressor from chassis.
3.Fix the new compressor on to the bottom pan		①Position accurately the new compressor. ②Screw up nuts.
4. Connect the compressor with system pipes.		① Weld the pipeline which connects with compressor(discharge pipe,suction pipe,oil equalized pipe).
5.Renew the electrical source wire of compressor		
6.Renew the electrical heating belt and exhausting temperature sensor		
7.Check if the compressor rotates in reverse and if lubricant have leaked.		

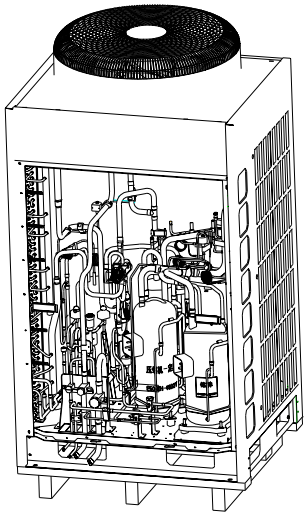
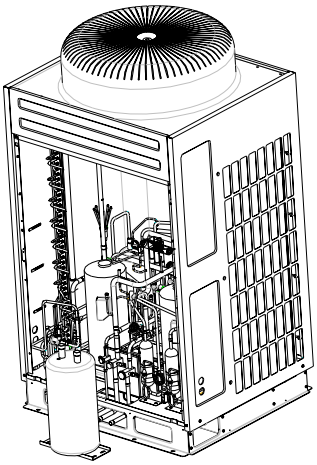
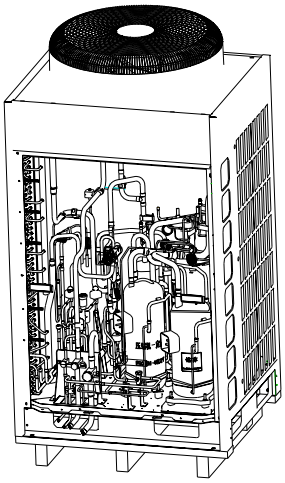
Disassembly and Assembly of 4-way valve		
Remark :		
Step	Illustration	Handling Instruction
1. Remove the coil of 4-way valve		①Use screwdriver to remove the screws fixing the coil ②Remove the coil of 4-way valve.
2. Use welding gun to unsolder the four pipes connected to 4-way valve		①Unsolder the pipe which connects the 4-way valve (see welding points in the picture)
3. Remove 4-way valve		①. Remove 4-way valve.
4. Install new 4-way valve		①Place 4-way valve on correct position
5. Connect pipeline with 4-way valve.		① Re-weld the 4-way valve with pipeline.
6. Install the coil of 4-way valve		① Place the coil of 4-way valve correctly. ② Tighten the screws with screwdriver.

Disassembly and Assembly of electronic expansion valve		
Remark :		
Step	Illustration	Handling Instruction
1 . Remove the coil of electronic expansion valve		①Remove the coil of electronic expansion valve
2 . unsolder the pipes connected to electronic expansion valve		①Use welding gun to unsolder the pipes connected to electronic expansion valve
3. Replace the electronic expansion valve		①Install the new electric expansion valve in correct position.
4. Weld the electric expansion valve with pipeline.		① Weld the electric expansion valve with pipeline.
5. Install the coil of electronic expansion valve		①Install the coil of electronic expansion valve

Disassembly and Assembly of Fan and Fan Motor		
Remarks :		
Step	Illustration	Handling Instruction
1． Disassembly of front plate		①Remove the bolts ②Disassemble the front plate.
2． Disassembly of cover of electric box		①Remove the bolts ②Disassemble the cover of electric box
3． Disassembly of power cord of fan		①Unplug the power cord of fan from mainboard ②Disassemble it from wire bundle and clip
4． Disassembly of dome		①Remove the bolts ②Disassemble the dome.

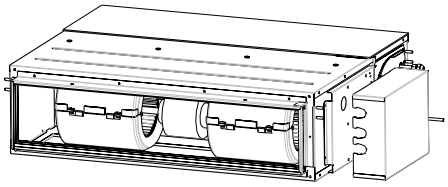
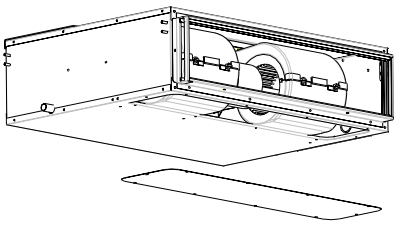
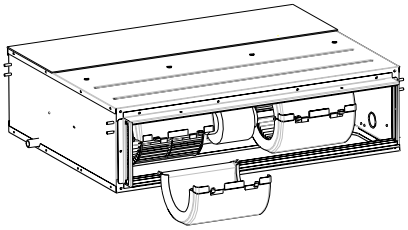
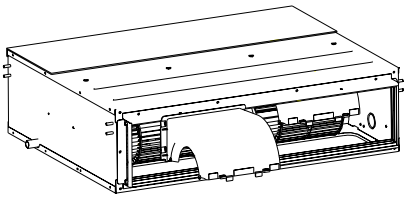
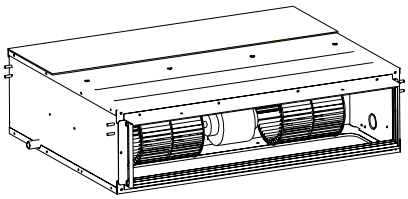
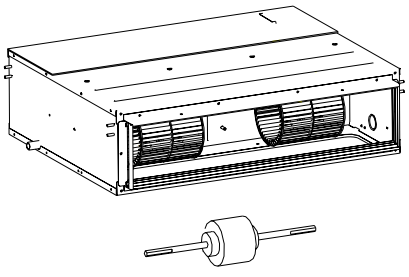
5. Disassembly of axial flow fan		①Disassemle retaining nuts for the fans ②Remove fans
6. Disassembly of motor		①Disassemble the screws for motor ②Replace motor
7. Replace motor and assemble the unit according to the reversed steps		①Replace motor and assemble the unit according to the reversed steps and then inspect the unit when energization.

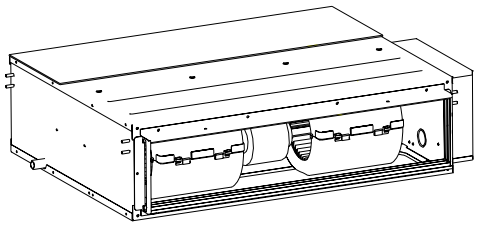
Disassembly and Assembly of electrical parts box		
Remark :		
Step	Illustration	Handling Instruction
1. Disaasembly of the cover of electric box		①Remove the bolts; ②Remove the cover of electric box.
2. Disaasembly of electric box		①Unplug each power cord and communication wire on mainboard. ②Remove screws. ③ Disassemble electric box.
3. Assemble it according to reversed steps.		①Assemble it according to reversed steps, and then inspect it after energization.

Disassembly and Assembly of Vapour Liquid Separator		
Remark :		
Step	Illustration	Handling Instruction
1. Disconnect the gas-liquid separator with its pipeline.		①Disconnect the gas-liquid separator with its pipeline.
2. Remove the gas-liquid separator from chassis.		①Remove the bolts ②Remove it from chassis.
3. Fix the new gas-liquid separator on chassis		①Place it on correct position. ②Screw the bolts up.
4. Connect the gas-liquid separator with pipeline.		①Weld the pipe with gas-liquid separator.

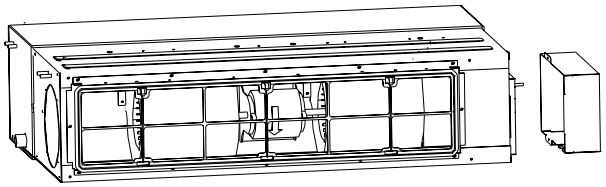
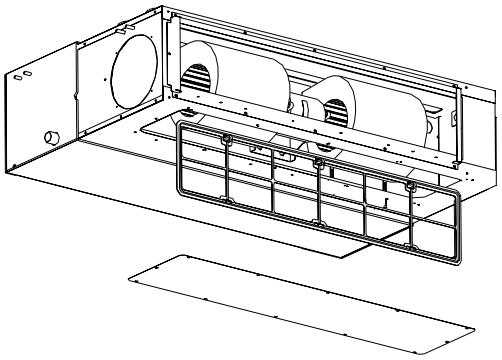
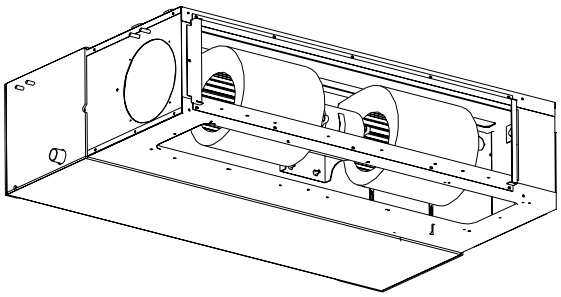
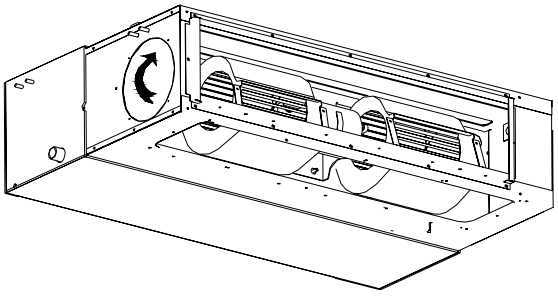
4.3 Disassembly and Assembly of Indoor Unit

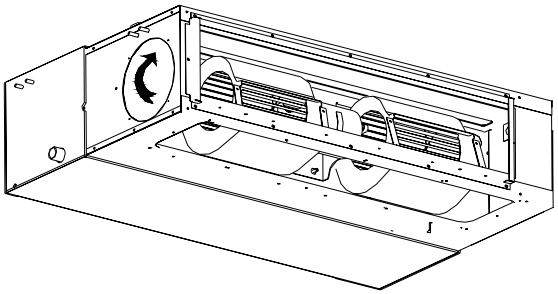
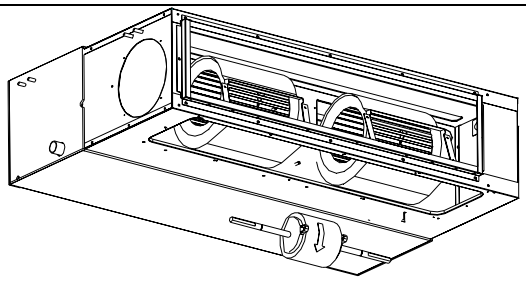
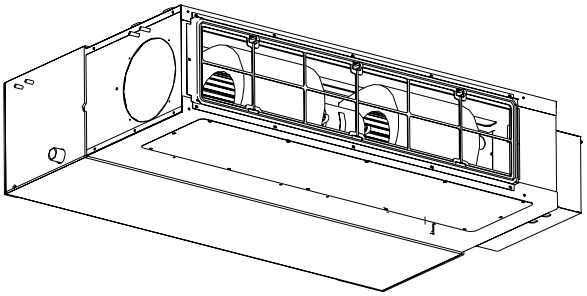
4.3.1 Duct-Type Unit

Removal and Assembly of Fan Motor		
Remarks: Before removing the fan, make sure to cut off the power firstly.		
Step	Illustration	Handling Instruction
1. Unplug the motor cables		●Cut off the power supply of indoor unit. Use screwdriver to remove the electric box cover and unplug the motor cables in electric box.
2. Remove the cover of return air inlet		●Use screwdriver to remove the lower return air inlet cover board.
3. Remove the back propeller housing		●Loosen the clamp between back propeller housing and front propeller housing. Remove the back propeller housing.
4. Remove the front propeller housing		●Use screwdriver to loosen the screws fixing the front propeller housing. Remove the front propeller housing.
5. Loosen the fan and motor.		●Use inner hexagonal spanner to loosen the screws on fan and remove the clamp fixing the motor.
6. Remove the motor		●Firstly, disengage the motor from motor support and then disengage the fan from the motor. Then, remove the motor from the lower return air inlet frame. In which, for the motor with automatic motor support, the motor support shall be removed in advance and then changed to the unit.

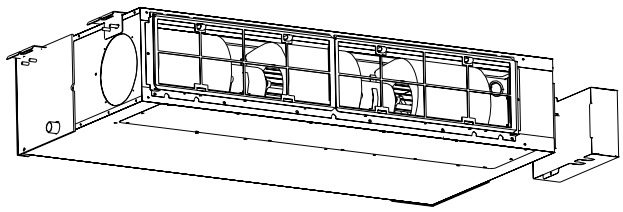
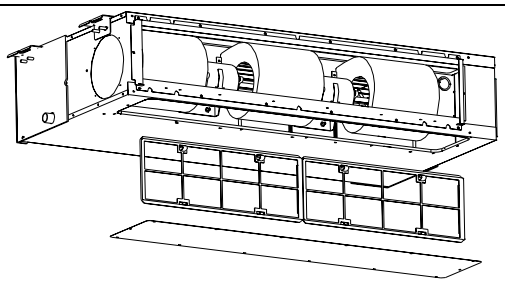
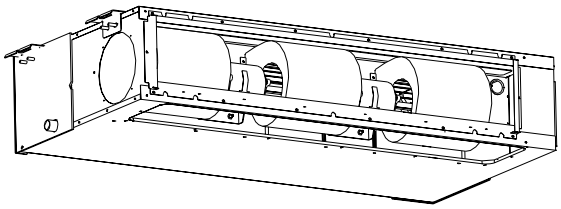
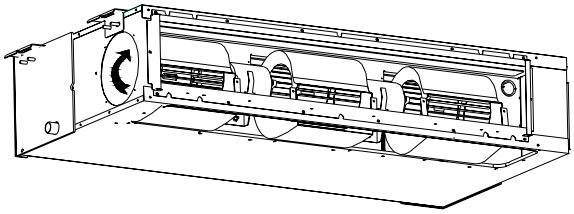
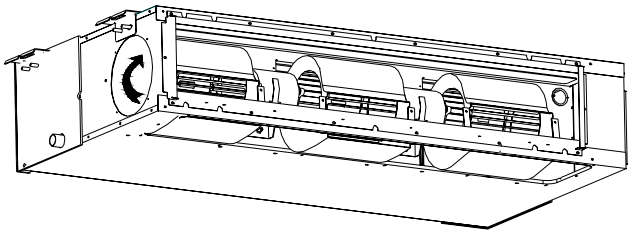
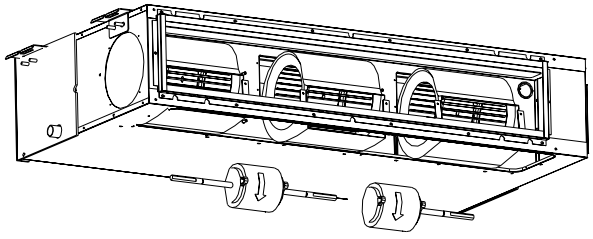
7. Replace with a new motor		●Assemble the unit in reverse to the disassembly procedures and energize it for testing.

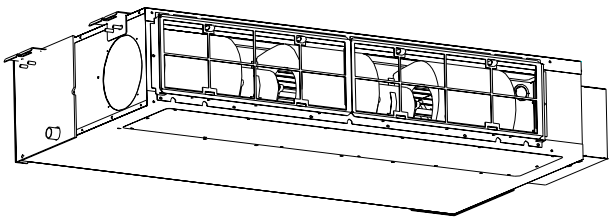
- Duct-Type Unit（5.6 kW～8.0 kW）

Removal and Assembly of Fan Motor		
Remarks: Before removing the fan, make sure to cut off the power firstly.		
Step	Illustration	Handling Instruction
1. Unplug the motor cables		●Cut off the power supply of indoor unit. Use screwdriver to remove the electric box cover and unplug the motor cables in electric box.
2. Remove the filter sub-assembly and return air inlet cover board		●Remove the filter sub-assembly from the return air inlet frame and use screwdriver to remove the return air inlet cover board.。
3. Remove the screws on fan sub-assembly.		●Remove the screws on fan sub-assembly.
4. Overturn the propeller housing		●Rotate the propeller housing to the return air inlet opening according to arrow direction.

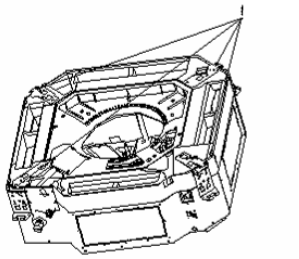
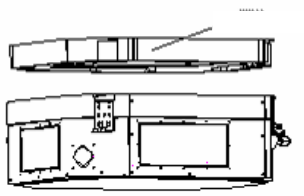
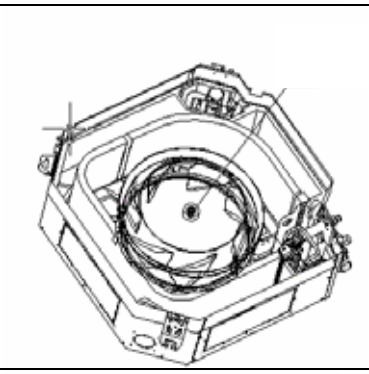
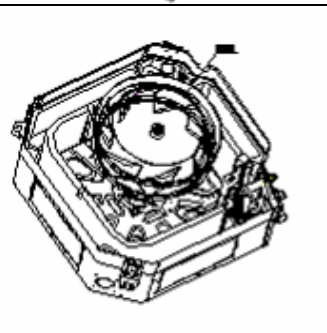
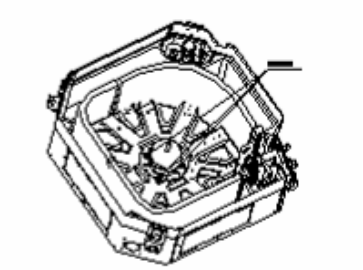
5. Loosen the fan and motor.		●Use inner hexagonal spanner to loosen the screws on fan and remove the clamp fixing the motor.
6. Replace the motor		●Firstly, disengage the motor from motor support. Then, sequentially disengage the fan sub-assembly form the motor shaft. Remove the motor from the return air inlet and replace with new motor. In which, for the motor with automatic motor support, the motor support shall be removed in advance and then changed to the unit.
7. Assemble the unit in reverse to the disassembly procedures		●Assemble the unit in reverse to the disassembly procedures and energize it for testing.

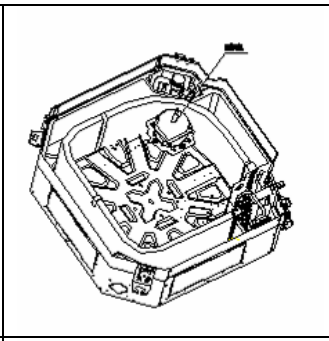
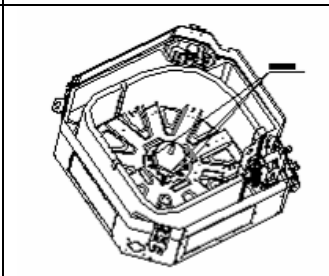
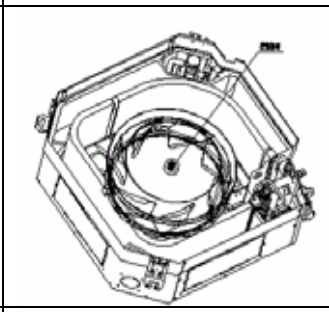
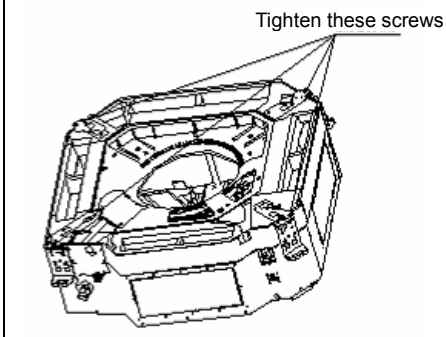
- Duct-Type Unit（9.0 kW～14 kW）

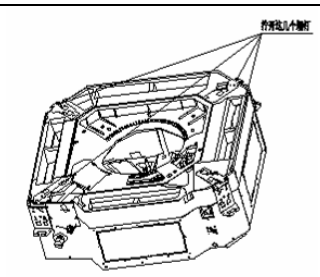
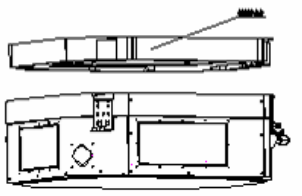
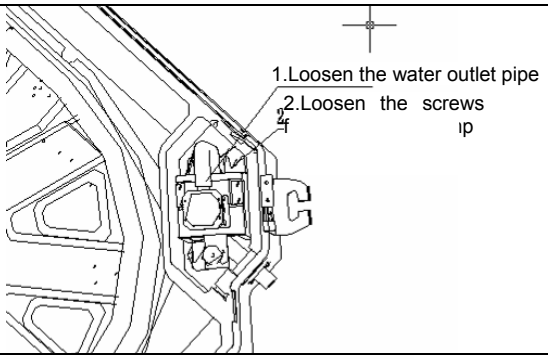
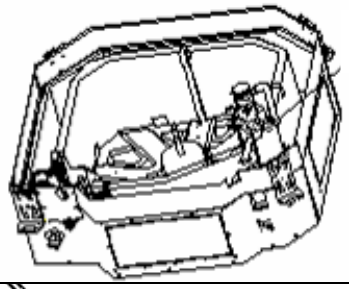
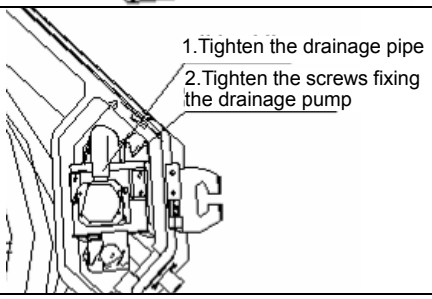
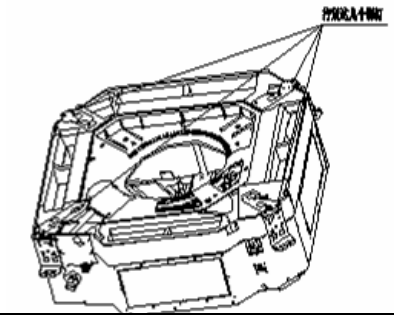
Removal and Assembly of Fan Motor		
Remarks: Before removing the fan, make sure to cut off the power firstly.		
Step	Illustration	Handling Instruction
1. Unplug the motor cables		●Cut off the power supply of indoor unit. Use screwdriver to remove the electric box cover and unplug the motor cables in electric box.
2. Remove the filter sub-assembly and return air inlet cover board		●Remove the filter sub-assembly from the return air inlet frame and use screwdriver to remove the return air inlet cover board.。
3. Remove the screws on fan sub-assembly.		●Remove the screws on fan sub-assembly.
4. Overturn the propeller housing		●Rotate the propeller housing to the return air inlet opening according to arrow direction.
5. Loosen the fan and motor.		●Use inner hexagonal spanner to loosen the screws on fan and remove the clamp fixing the motor.
6. Replace the motor		●Firstly, disengage the motor from motor support. Then, sequentially disengage the fan sub-assembly form the motor shaft. Remove the motor from the return air inlet and replace with new motor. In which, for the motor with automatic motor support, the motor support shall be removed in advance and then changed to the unit.

7. Assemble the unit in reverse to the disassembly procedures		●Assemble the unit in reverse to the disassembly procedures and energize it for testing.

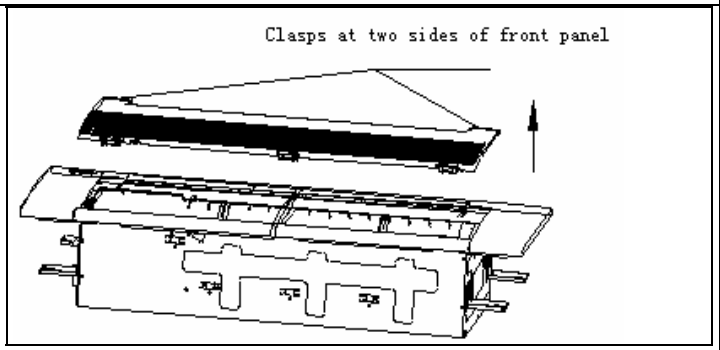
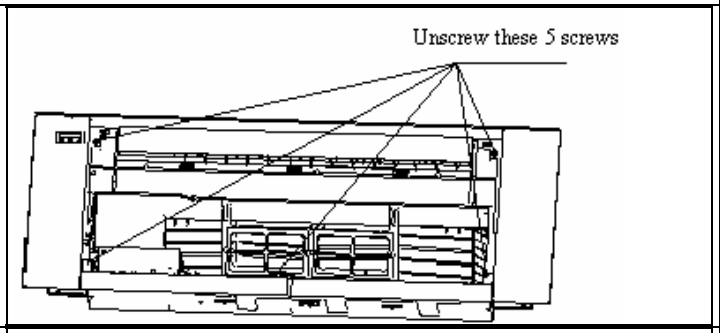
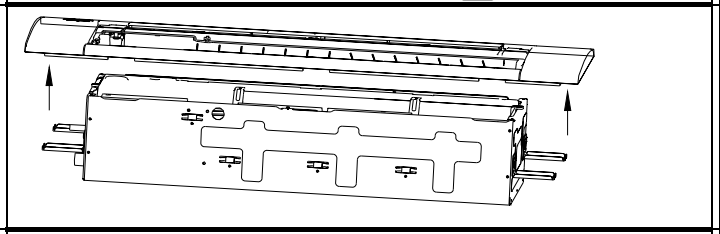
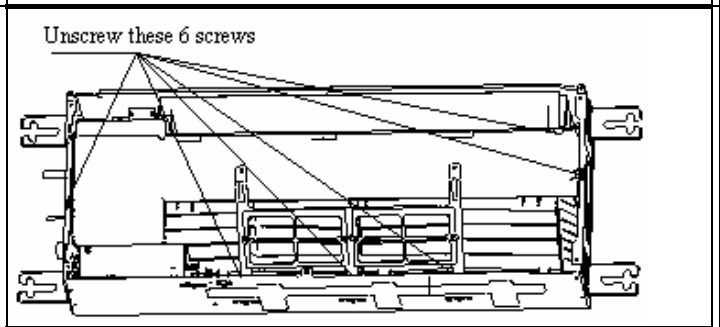
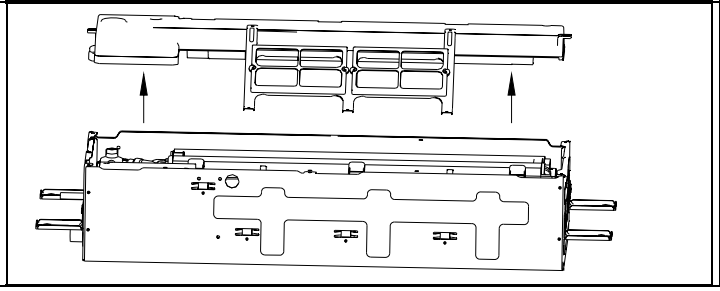
4.3.2Cassette-type Unit

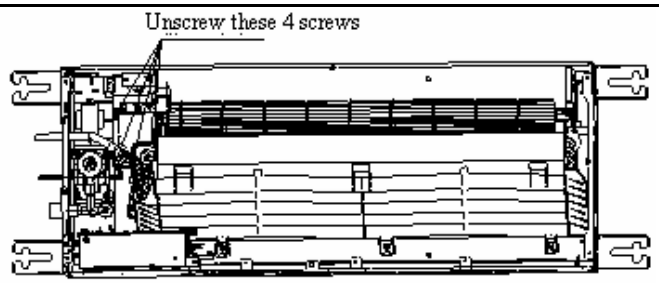
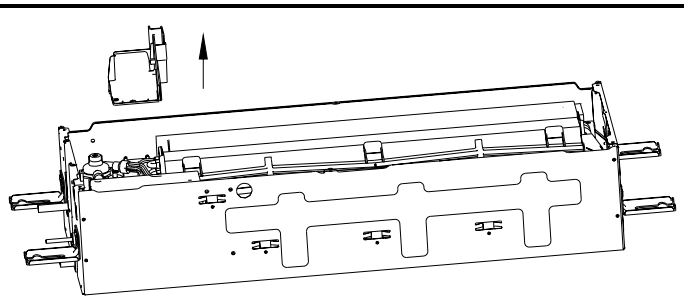
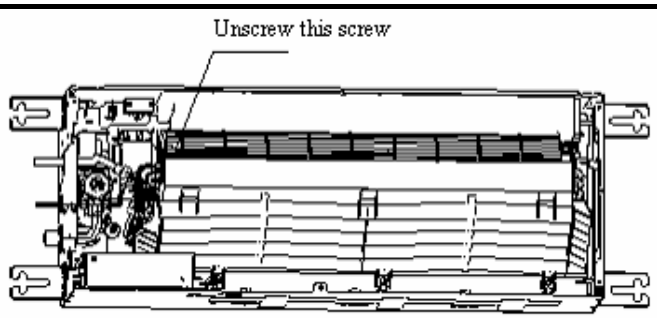
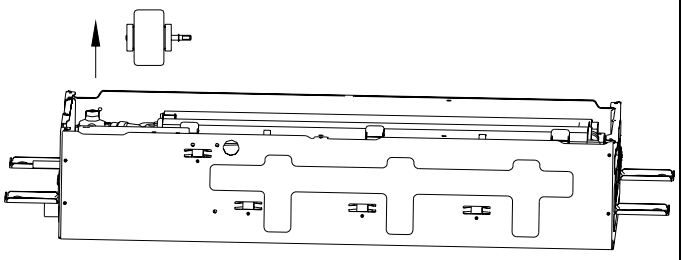
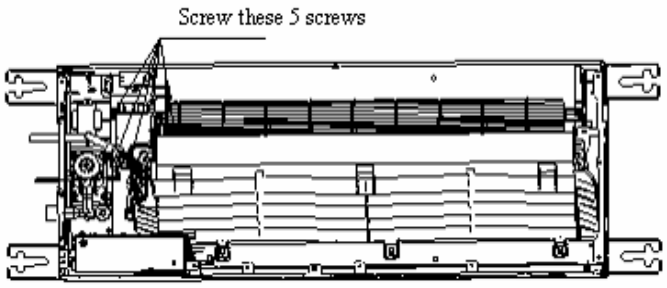
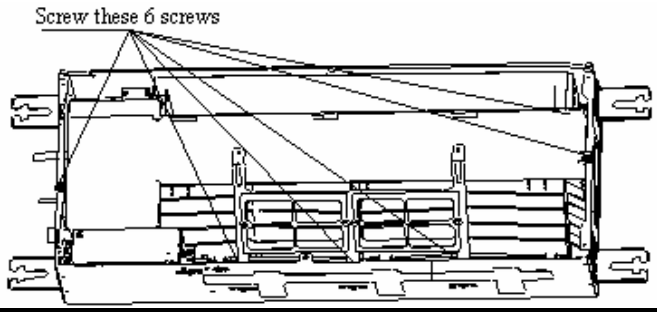
Removal and Assembly of Fan Motor		
Step	Illustration	Handling Instruction
1. Loosen the screws fixing the water tray		● Use screwdriver to loosen the screws fixing the water tray
2. Remove the water tray		●Remove the water tray
3. Loosen the bolts fixing the fan		● Use spanner to loosen the bolts fixing the fan.
4. Remove the fan		●Remove the fan
5. Loosen the screws fixing the motor		● Use screwdriver to loosen the screws fixing the motor

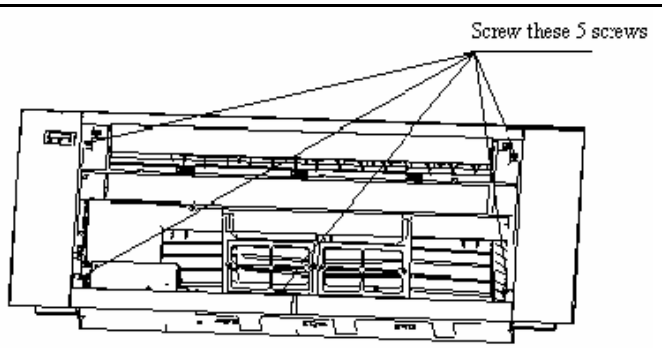
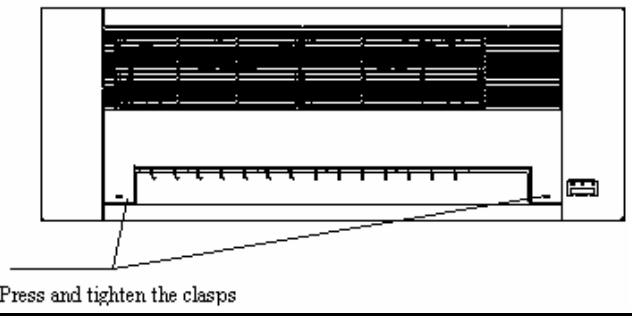
6. Remove the motor and replace it		●Remove the motor and replace it
7. Tighten the screws fixing the motor		● Use screwdriver to tighten the screws fixing the motor.
8. Mount the fan and tighten the fixing bolts		●Mount the fan and use spanner to tighten the bolts fixing the fan.
9. Mount the water tray and tighten the screws		● Use screwdriver to loosen the screws fixing the water tray

Removal and Installation of Drainage Pump		
Step	Illustration	Handling Instruction
1. Loosen the screws fixing the water tray		● Use screwdriver to loosen the screws fixing the water tray
2. Remove the water tray		● Remove the water pump and replace it.
3. Pull out the water outlet pipe and loosen the screws fixing the water pump.		●Pull out the water outlet pipe and use screwdriver to loosen the screws fixing the water pump
4 Remove the water pump and replace it.		● Remove the water pump and replace it.
5. Connect the drainage hose and tighten the screws fixing the water pump.		●Connect the drainage hose and use screwdriver to tighten the screws fixing the water pump.
6. Mount the water tray and tighten the screws		● Use screwdriver to tighten the screws fixing the water tray

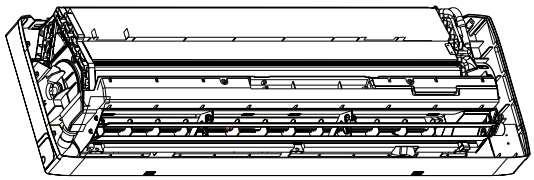
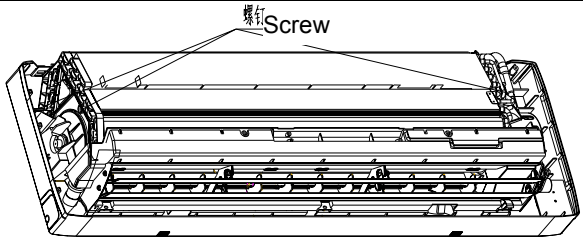
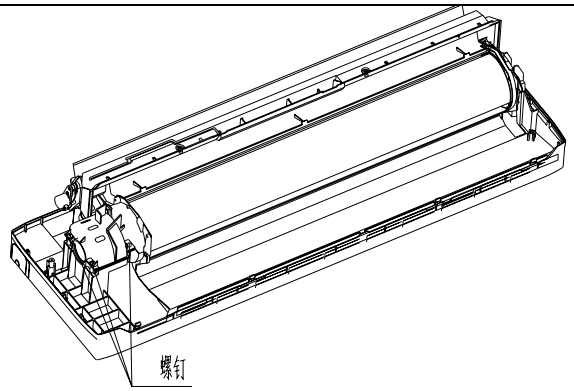
4.3.3 Single-sided Cassette Unit

Disassembly and Assembly of fans and motor		
Step	Illustration	
1. Remove the front panel assy		● Press the switch on both sides of front panel to release it from the clasps.Then, remove the front panel assy.
2. Unscrew the retaining bolts		● Remove the retaining screws of front panel assy and front case.
3. Remove front case assy.		● Remove the retaining screws of front panel assy and front case.
4. Unscrew the retaining screws of defrosting tray.		● Unscrew the retaining screws of defrosting tray.
5. Remove the defrosting tray and the support of filter.		● Remove the defrosting tray and the support of filter.

6 . Unscrew the retaining screw of cover of motor		● Unscrew the retaining screw of cover of motor
7. Remove the motor cover assy.		● Remove the motor cover assy.
8. Unscrew the retaining screws of motor and motor shaft.		Rotate the cross flow fan and make the screws upward.Then,remove the screws.
9. Replace the motor.		● Remove the motor and then install a new one.
10. Install the motor cover assy and screw the bolts up.		● Install the motor cover assy and screw the retaining screws of motor cover and cross flow fan.
11. Install defrosting tray and the support of filter. Then screw the bolts.		● Install defrosting tray and the support of filter. Then screw the bolts.

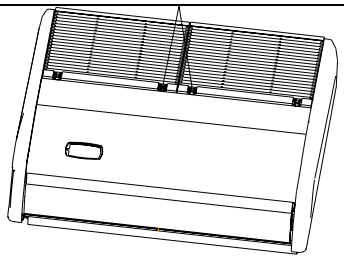
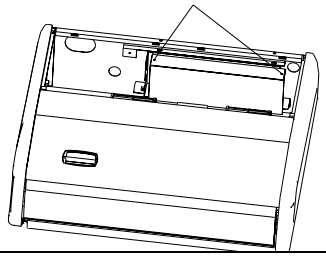
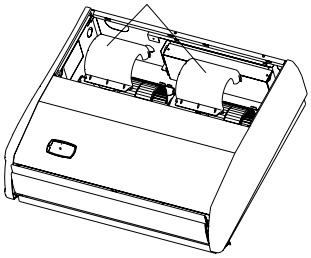
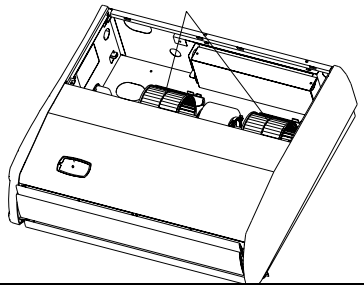
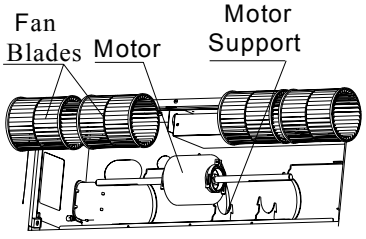
12. Install the front case assy and screw the bolts.		● Install the front case assy and screw the bolts.
13. Install the front panel assy.		● Install the front panel assy and fix it .

4.3.4Wall-mounted Unit

Removal and Wall-mounted Unit Assembly of Fan Motor		
Remarks: Before removing the compressor, make sure that there is no refrigerant inside the pipe system and that the power has been cut off.		
Step	Illustration	Handling Instruction
1. Firstly, remove the front panel, front case and electric box		●Firstly, use screwdriver to loosen the screws. ●Unplug the motor terminals in the electric box. Loosen the earth screws and lift up.
2. Remove the evaporator		●Firstly, use screwdriver to remove the fixing screws on the left and right side. Then, remove the evaporator.
3. Remove the motor and cross flow fan		●Use screwdriver to remove the screws fixing the motor clamp and remove the screws connecting the motor and cross flow fan. Then, the motor can be separated from the cross flow fan.

Screw

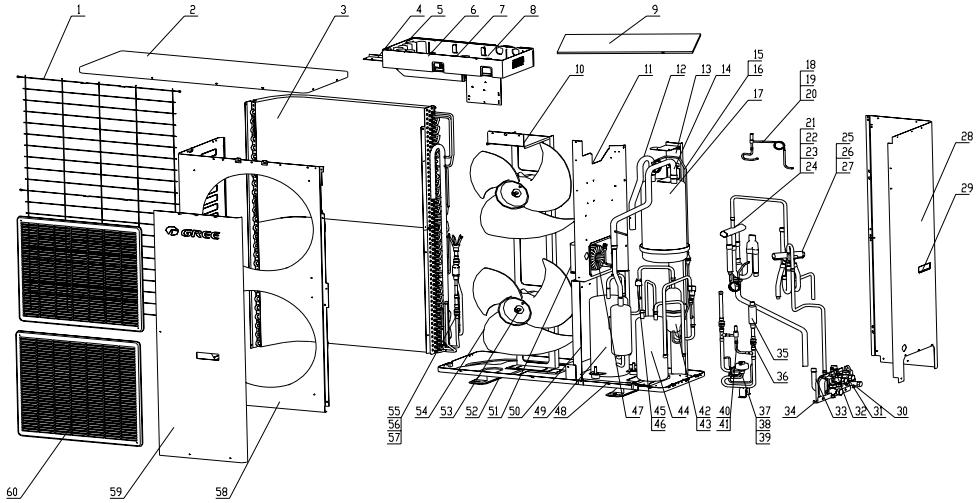
4.3.5 Floor Ceiling Type Unit

Removal and Installation of Motor and Fan		
Remarks: Make sure that the power supply is cut off before removal of motor		
Step	Illustration	Handling Instruction
1. Remove grill		● Cut off the power supply for indoor unit. Loosen the grill with the screwdriver or other tools to remove the grill.
2.Remove motor wire		● Remove the lower electric box cover and pull out the motor wire in the electric box.
3. Remove rear housing propeller.		● Loosen the clasps of the front and rear propeller housings to remove the rear propeller housing.
4. Remove fan louver and motor		● Loosen the screws on the fan blades and remove the hoop fixing the motor.
5. Remove motor		● Make the motor away from the motor support and loosen the fan blades from the motor.
6. Replace a new motor		● Assemble the unit according to the above sequence from back to front and then energize the unit for test.

5 EXPLODED VIEWS AND PART LIST

5.1 Outdoor Unit

★ GMV-Pds100W/Na-K, GMV-Pds120W/Na-K

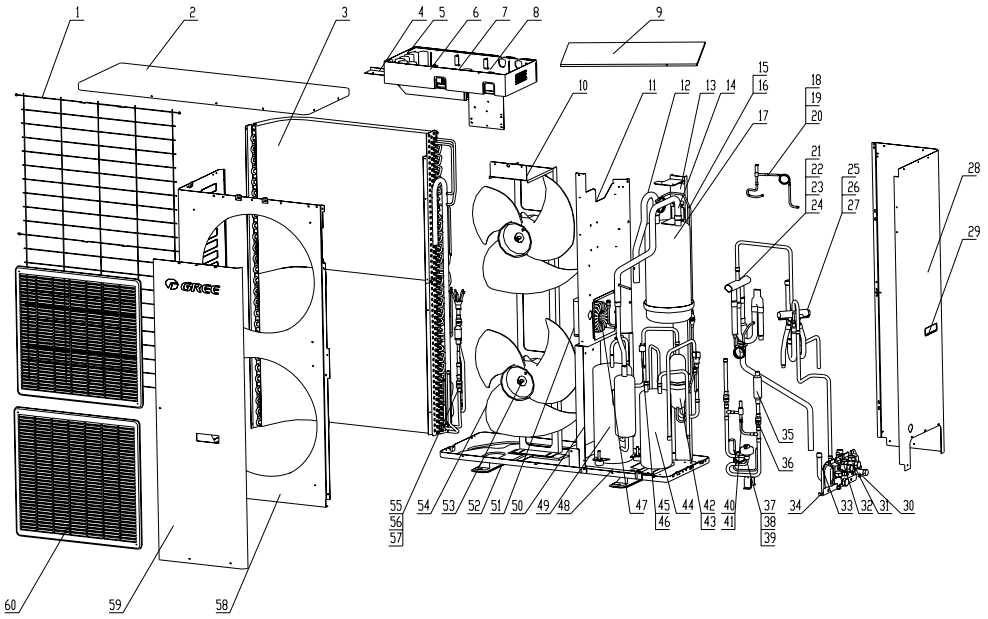


Parts List：

No.	Part Name	Code	Qty
1	Rear Grill	01475432	1
2	Top cover plate	01255262	1
3	Condensator assy	01124166	1
4	Electric-box sub-assy	01394836	1
5	Electric box	26904131	1
6	Mainboard WZ6P30	30226209	1
7	Filter plate WZ814B	30228115	1
8	Overcurrent circuit breaker(16/40A) S251S-C40	46020018	1
9	Electric box cover	01424235	1
10	Motor support sub-assy	01804318	1
11	Isolation sheet sub-assy1	01244111	1
12	Connecting pipe (gas)	05024967	1
13	Support sub-assy (gas)	01804149	1
14	Suction pipe sub-assy	04674176	1
15	Capillary sub-assy	04104156	1
16	Filter	07212121	2
17	Gas-Liquid Separator	07424104	1
18	Gas by-pass valve sub-assy	07334338	1
19	Solenoid Valve FDF2A	43000054	1
20	Solenoid Valve accessories(solenoid coil)	4304000403	1
21	4-way valve sub-assy1	04144165	1
22	4-way valve(SHF-20H)	43000338	1
23	4-way valve Fittings(solenoid coil)	4300040029	1

24	Filter φ19	07210037	1
25	4-way valve sub-assy2	04144166	1
26	4-way valve(3.5 HP)(R410A)	4300008201	1
27	4-way valve fittings(solenoid coil)	4300040031	1
28	Rear side plate	01314168P	1
29	Handle	26235253	3
30	Cut-off valve 3/8(R410A)	07130209	1
31	Cut-off valve 1/2(R410A)	07130210	1
32	Cut-off valve 3/4(R410A)	07130212	1
33	Gas valve sub-assy	07103030	1
34	Valve support assy	01804156P	1
35	One-way valve	04324001	1
36	Filter	07212121	2
37	Electric expansion valve sub-assy2	07334337	1
38	Electric expansion valve SPF-18D88	07334193	1
39	Electric expansion valve coil	4300010811	1
40	Solenoid Valve fittings (Solenoid Coil)	4304000428	1
41	Solenoid Valve FDF6A	43000072	1
42	Oil Separator	07228302	1
43	Oil SeparatorSub-assy	07424136	1
44	Liquid Accumulator (with 3 pipes	07424135	1
45	Pressure Switch (with leading-out wire)	4602000902	1
46	Discharge Pipe Sub-assy	04634235	1
47	PFCInductance	43120122	1
48	Mounted Plate Sub-assy	01844134P	1
49	Compressor and Fittings 5VD420ZAA21	00205224	1
50	Isolation sheet sub-assy2	01244136	1
51	Inductance Box	01424173	1
52	Chassis Sub-assy	01194137P	1
53	Motor SWZ120A	15704115	1
54	Axial Flow Fan φ472X165	10338731	1
55	Electric expansion valve sub-assy	07334346	1
56	Electric expansion valve VPF-25D18	07334102	1
57	Electric expansion valve coil	4300010810	1
58	Cabinet	01435436	1
69	Front Side PlateSub-assy	01314139	1
60	Front Grill	22414102	2

★ GMV-Pds140W/Na-K, GMV-Pds160W/Na-K Exploded View

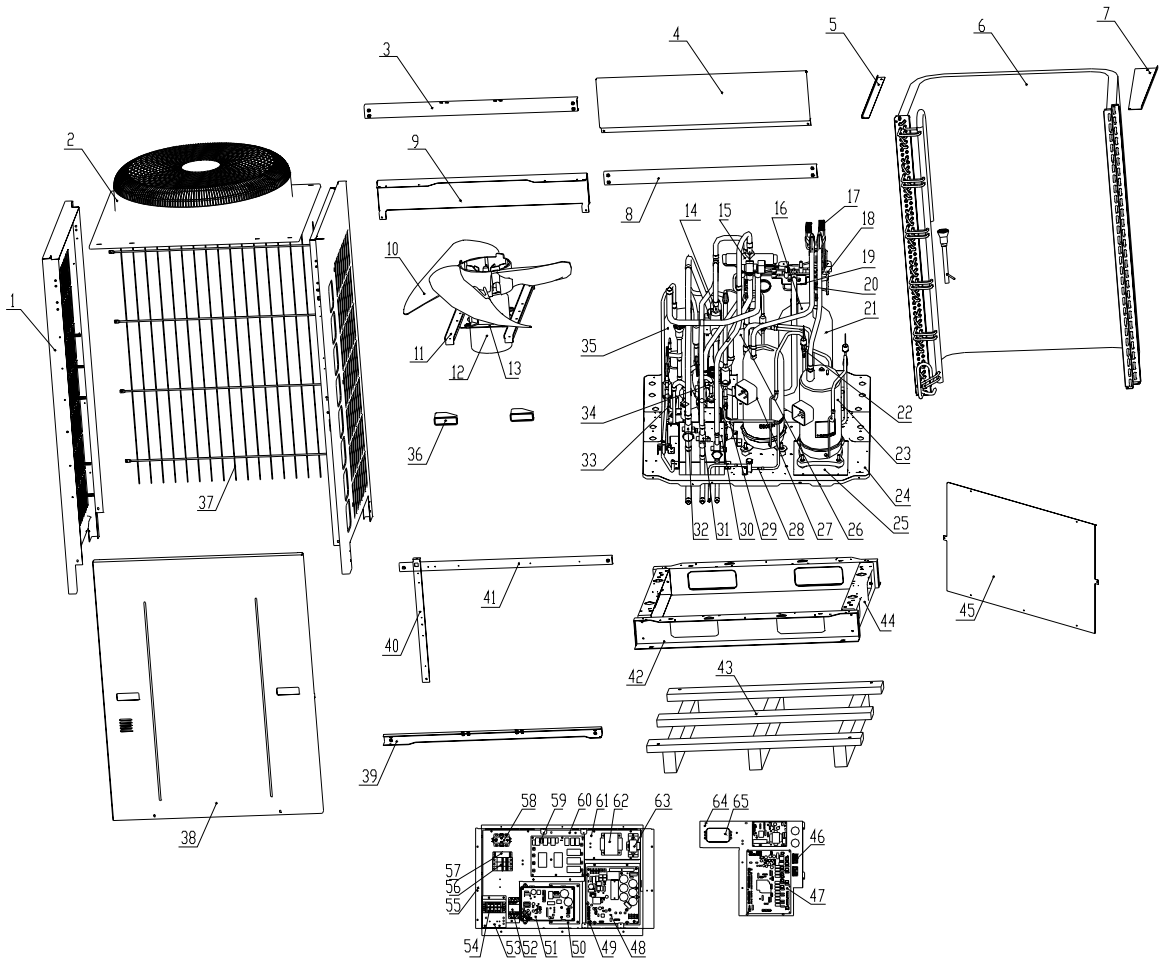


Parts List：

No.	Part Name	Code	Qty
1	Rear Grill	01475432	1
2	Top cover plate	01255262	1
3	Condensator assy	01124169	1
4	Electric-box sub-assy	01394836	1
5	Electric box	26904131	1
6	Mainboard WZ6P30	30226209	1
7	Filter plate WZ814B	30228115	1
8	Overcurrent circuit breaker(16/40A) S251S-C40	46020018	1
9	Electric box cover	01424235	1
10	Motor support sub-assy	01804318	1
11	Isolation sheet sub-assy1	01244111	1
12	Connecting pipe (gas)	05024967	1
13	Support sub-assy (gas)	01804149	1
14	Suction pipe sub-assy	04674176	1
15	Capillary sub-assy	04104156	1
16	Filter	07212121	2
17	Gas-Liquid Separator	07424104	1
18	Gas by-pass valve sub-assy	07334338	1
19	Solenoid Valve FDF2A	43000054	1
20	Solenoid ValveFittings (solenoid coil)	4304000403	1
21	4-way valve sub-assy1	04144165	1
22	4-way valve(SHF-20H)	43000338	1

	23	4-way valveFittings (solenoid coil)	4300040029	1
	24	Filter φ19	07210037	1
	25	4-way valve sub-assy2	04144166	1
	26	4-way valve(3.5hp)(R410A)	4300008201	1
	27	4-way valveFittings (solenoid coil)	4300040031	1
★	28	Rear side plate	01314168P	1
	29	Handle	26235253	3
	30	Cut-off valve 3/8(R410A)	07130209	1
	31	Cut-off valve 1/2(R410A)	07130210	1
	32	Cut-off valve 3/4(R410A)	07130212	1
	33	Gas valveSub-assy	07103030	1
	34	Valve SupportSub-assy	01804156P	1
	35	One-way valve	04324001	1
	36	Filter	07212121	2
	37	Electric expansion valve sub-assy2	07334337	1
	38	Electric expansion valve SPF-18D88	07334193	1
	39	Electric expansion valve coil	4300010811	1
	40	Solenoid Valve Fittings (solenoid coil)	4304000428	1
	41	Solenoid Valve FDF6A	43000072	1
	42	Oil Separator	07228302	1
	43	Oil SeparatorSub-assy	07424136	1
	44	Liquid Accumulator (with 3 pipes	07424135	1
	45	Pressure Switch (with leading-out wire)	4602000902	1
	46	Discharge pipeSub-assy	04634235	1
	47	PFCInductance	43120122	1
	48	Mounted PlateSub-assy	01844134P	1
	49	Compressor and Fittings 5VD420ZAA21	00205224	1
	50	Isolation sheet sub-assy2	01244136	1
	51	Inductance box	01424173	1

GMV-Pds224W/Na-M.GMV-Pds280W/Na-M

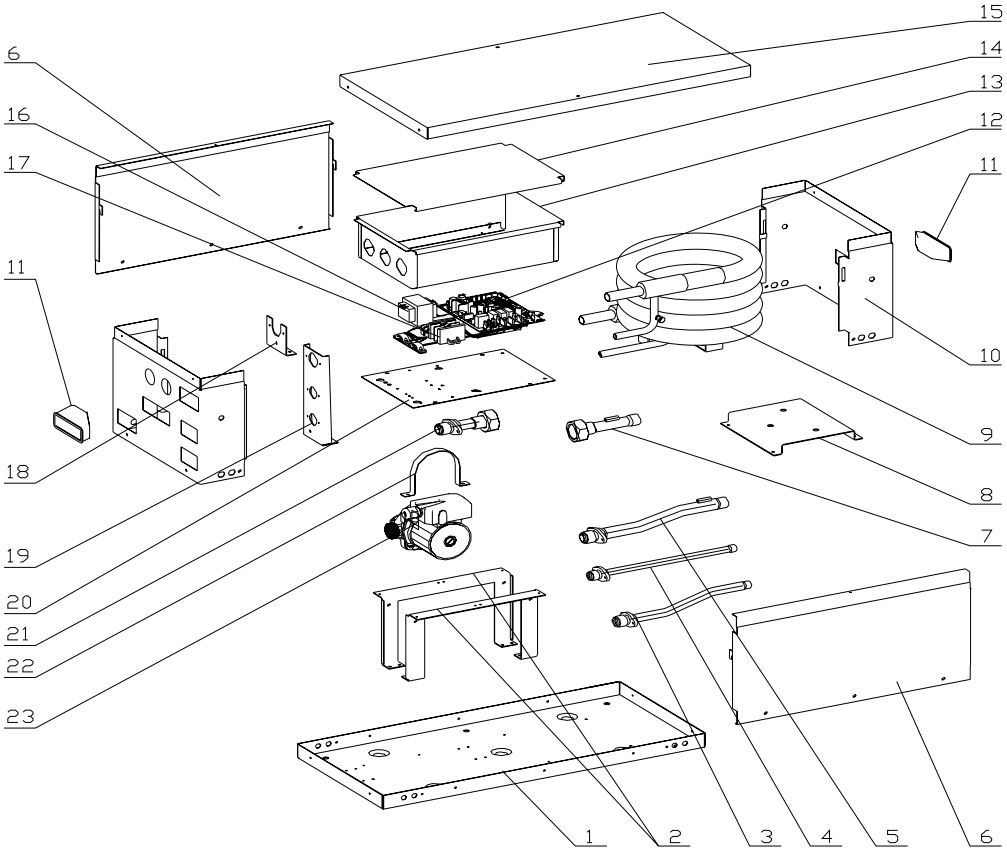


No.	Part Name	Code	Qty
1	Left side panel sub-assy	01313256P	1
2	Leading cover(VPd280)(apricot ash)	26904101	1
3	Back cover plate	01313261P	1
4	front cover plate	01264142P	1
5	Windshield(left)	01354102	1
6	Condenser assy	01124172	1
7	Windshield（right）	01354103	1
8	Fixing support sub-assy NO.2	01324120P	1
9	Fixing support sub-assy NO.1	01324221P	1

10	Axes flow wind leaf sub-assy (VPd280)(black)	10338702	1
11	Motor support	0132431501P	2
12	Motor SWZ750A	15704106	1
13	Motor support sub-assy	01324180P	1
14	4-way valve sub-assy A	04144176	1
15	4-way valve sub-assy B	04144177	1
16	suction pipe sub-assy	04674202	1
17	Oil return pipe sub-ass	04324820	1
18	Liquid branch circuit valve sub-assy 1	04324826	1
19	Oil return pipe sub-assy Support	01804219P	1
20	Low pressure measure valve	322101002	1
21	liquid-gas separator	07424148	1
22	Displacement pipe sub-assy 1	04634248	1
23	Compressor and it's fittings E405DHD-38D2Y	00204116	1
24	lower panel sub-assy	01194307P	1
25	Compressor fixing support sub-assy	01324331P	1
26	oil separator	07423202	1
27	Compressor and it's fittings E505DH-49D2Y	00204124	1
28	Liquid pipe cut-off valve sub-assy	07304119	1
29	desiccation filter sub-assy	07414129	1
30	Support	01804166P	1
31	Displacement pipe sub-assy 2	04634249	1
32	Gas pipe cut-off valve sub-assy	07304118	1
33	Electrical expansion vavle sub-assy 1	07334355	1
34	Electrical expansion vavle sub-assy 2	07334356	1
35	liquid receiver	07424157	1
36	handle(apricot ash)	26235253	2
37	Back grill	01238740	1
38	Panel Front	01543243P	1
39	Fixing support sub-assy 3	01313259P	1
40	Sustain lengthways girder	01894156P	1
41	Sustain transverse girder sub-assy	01874132P	1
42	lower seat transverse girder	01874115P	2
43	Package wooden base	51094102	1
44	lower seat lengthways girder sub-assy	01874137P	2
45	cover of electrical box	01264173P	1
46	Terminal board 2-8	42011103	2
47	Main Board WZ6P30A	30226226	1
48	Main Board ZQ86	30228606	1
49	radiator SRX11D250	49010605	1
50	radiator	49018761	1
51	Main Board WZS901	30229004	1
52	AC Contactor LC1D25M7C	44010213	1
53	Electric element install Board sub-assy 2	01324319	1
54	Terminal Board (4 bit)	42011051	1
55	electrical box sub-assy	01394839P	1
56	Over Current Protector (3/40A) OSMC32N3C40	45020214	1
57	Anti-phase Protector EWS	46020054	1
58	AC Contactor CJX9B-25S/D	44010245	1
59	filter board WZ814A	30228111	1
60	Electric element install Board sub-assy 1	01324318	1
61	Electric element install Board sub-assy 4	01324324	1
62	reactor L1.92mH/34A/10/300+400	43130174	1
63	Power Transformer 66X32	43110012	1
64	Electric element install Board sub-assy 1	01324345	1
65	filter FN2090-16-06	43130016	1

5.2 Hydro unit

★ RQD5GA-K,RQD8GA-K Exploded view



Parts List：

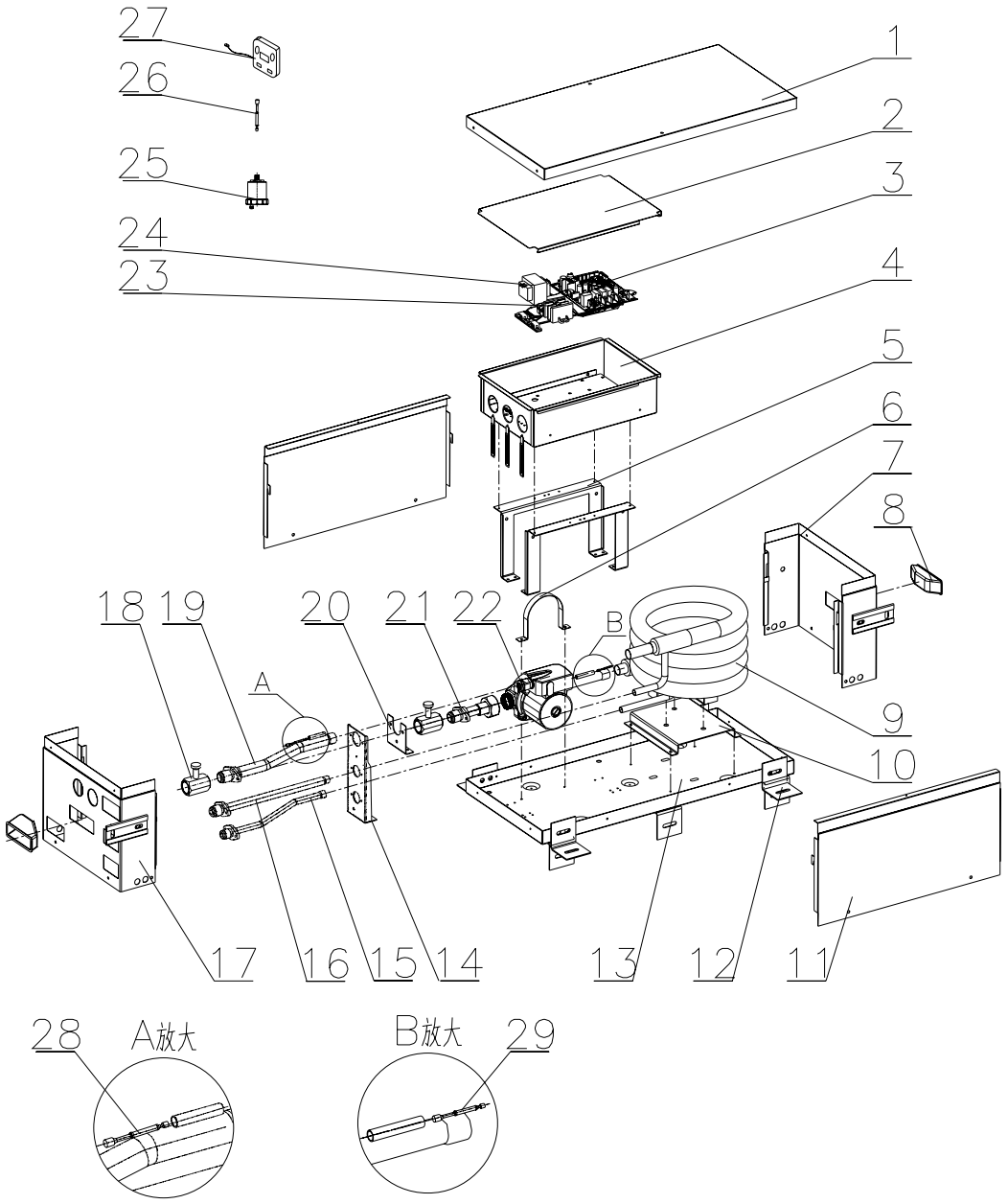
No.	Part Name	Code	Qty
1	ChassisSub-assy	01192808P	1
2	Upright Column	01852803P	2
3	Cut-off valveSub-assy2	07332811	1
4	Cut-off valveSub-assy1	07332810	1
5	Discharge PipeSub-assy	04364105	1
6	Rear Panel	02222812P	2
7	Water PumpSub-assy	15402802	1
8	Support Sub-assy	01802830P	1
9	Tube-in-tube condensator	01152802①	1
		01152804②	
10	Right Side Plate Sub-assy	01312810P	1
11	Handle(apricot-gray)	26235253	2
12	Mainboard Z6P30	30226211	1
13	Electric-box sub-assy	01392834P	1
14	Electric box cover	01262818P	1
15	Top cover plate	01262817P	1
16	Mains Transformer48X26G	43110233	1
17	Patching Board (4-bit)	42010265	1
18	Support(Discharge Pipe)	01802827P	1
19	Support(gas pipe)	01802826P	1
20	PCB Sub-assy	01322813	1
21	Feed Pipe Sub-assy	04362830	1
22	Support1(Water Pump)	01802828	1
23	Water Pump RS15/6	43130322	1

Notes：

① is only the part of RQD5GA-K；

② is only the part of RQD8GA-K；

★ RQ5GB-K,RQ8GB-K Exploded view



Parts List:

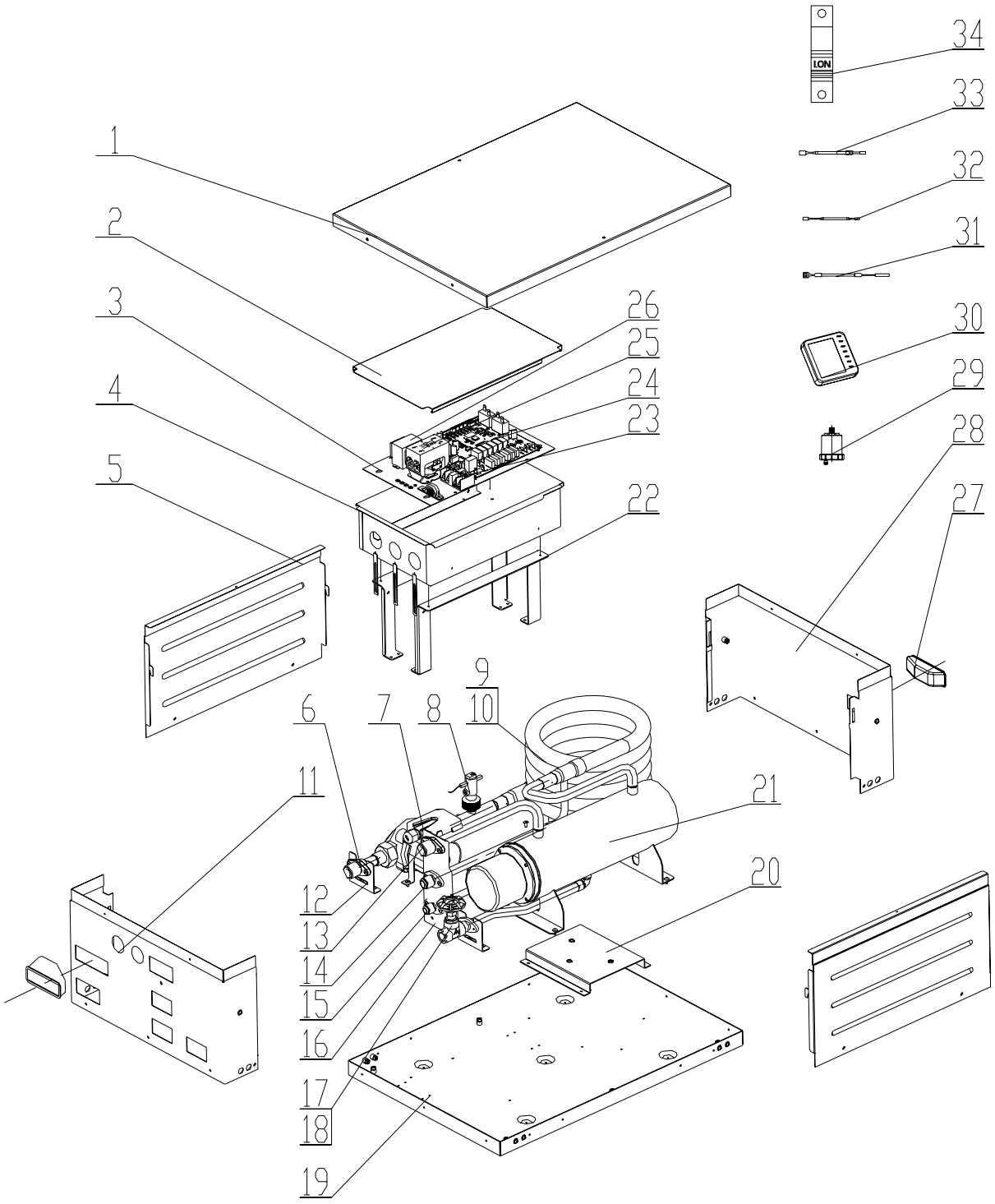
No.	Part Name	Code	Qty
1	Top Cover	01262817P	1
2	Electric Box Cover	01424256P	1
3	Main Board	30226228	1
4	Electric Box Assy	01395079 ①	1
		01395080 ②	
5	Column	01854113P	2
6	Supporter 1	01802828	1
7	Right Side Plate Sub-Assy	01312810P	1
8	Handle	26235253	2
9	Double Pipe Condenser	01152802①	1
		01152804②	
10	Support sub-assy	01802830P	1
11	Rear Panel	02222812P	2
12	Supporting Strip 1	01892828P	4
13	Chassis Sub-assy	01192808P	1
14	Supporter	01802826P	1
15	Cut-off valve Sub-Assy 2	07332811	1
16	Cut-off valve Sub-Assy 1	07332810	1
17	Left Side Plate Sub-Assy	01312809P	1
18	Pipe connector	06652805	1
19	Outlet Water Pipe Sub-Assy	04364105①	1
		04362831 ②	
20	Supporter	01802827P	1
21	Enter Water Pipe Sub-Assy	04362830	1
22	Water Pump	43130322	1
23	Terminal Board	42010265	1
24	Transformer	43110233	1
25	Auto Air Outlet Valve	07108208	1
26	Temperature Sensor	390002073	1
27	Display Board	30296313	1
28	Tube sensor	39000283	1
29	Tube sensor	390000372	1

Notes：

① is only the part of RQ5GB-K；

② is only the part of RQ8GB-K；

★ RQD5GB-K,RQD8GB-K Exploded view



Parts List:

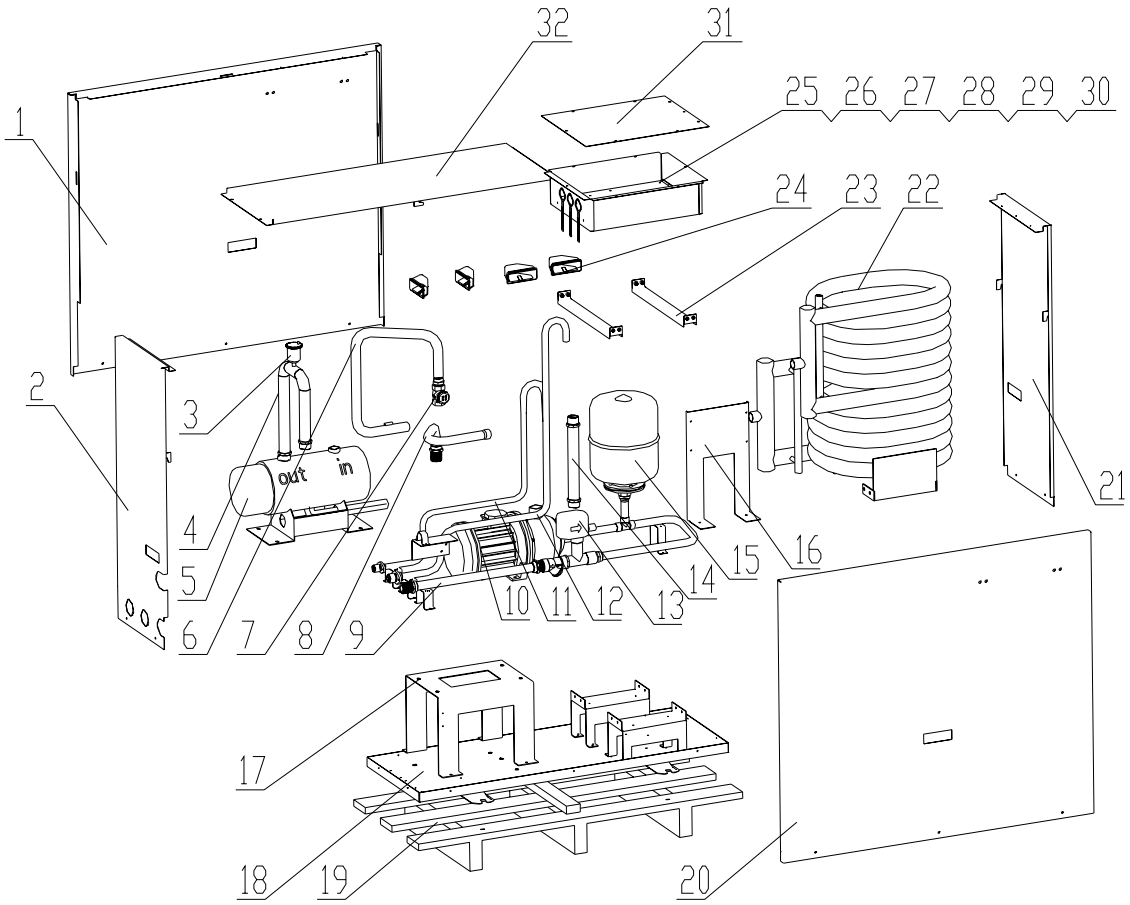
No.	Part Name	Code	Qty
1	Top Cover	01264216P	1
2	Electric Box Cover	01424268P	1
3	Original PCB Mounting Plate Sub-Assy	01324367	1
4	Electric Box Assy	01392868	1
5	Panel front(rear)	01544141P	2
6	Enter Water Pipe Sub-Assy	04362830	1
7	Water Pump	43130322	1
8	Water Flow Switch Sub-Assy	45028061	1
9	Double Pipe Condenser	01152802①	1
		01152804②	
10	Tube in tube heat exchanger	01124184①	1
		00904122 ②	
11	Left Side Plate Sub-Assy	01314242P	1
12	Supporter	01802827P	1
13	Outlet Water Pipe Sub-Assy	04364119	1
14	Cut-off valve Sub-Assy 2	07334418	1
15	Cut-off valve Sub-Assy 1	07334419	1
16	Supporter	01802826P	1
17	Cut-off valve	07334422	1
18	Sewage Pipe	04362899	1
19	Chassis Sub-assy	01194145P	1
20	Support sub-assy	01802830P	1
21	Electric heater	32102803	1
22	Column	01854116P	2
23	Terminal Board	42010265	1
24	Main Board	30226228	1
25	AC contactor	44010221	1
26	Transformer	43110233	1
27	Handle	26235253	2
28	Right Side Plate Sub-Assy	01314245P	1
29	Auto Air Outlet Valve	07108208	1
30	Display Board	30296313	1
31	Temperature Sensor	390000372	1
32	Tube sensor	390002073	1
33	Tube sensor	39000283	1
34	Bipolar Air Switch	45010029	1

Notes：

① is only the part of RQD5GB-K；

② is only the part of RQD8GB-K；

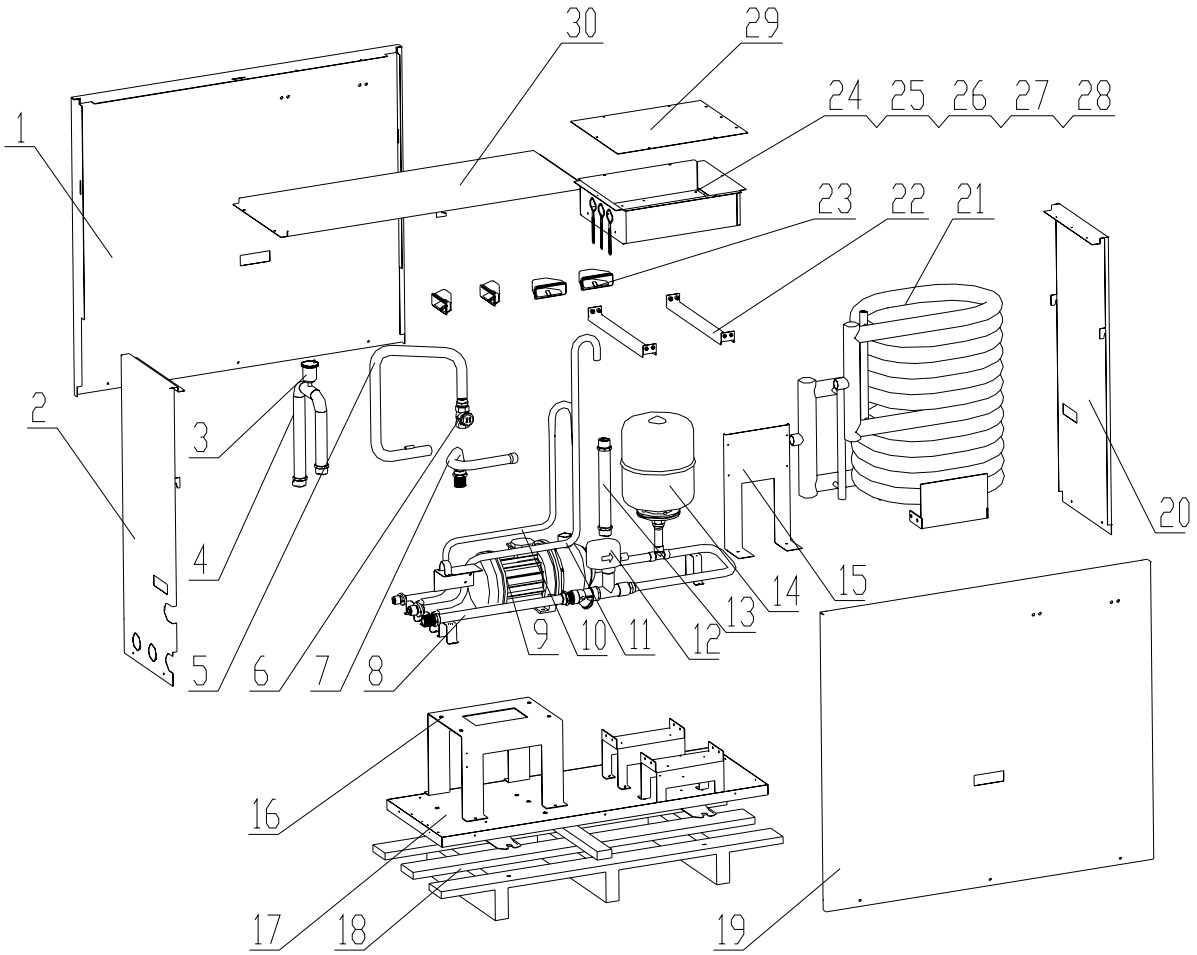
★ RQD30LA-M Exploded View



Parts List:

No.	Part Name	Code	Qty
1	Right Side Plate	01314302P	1
2	Front Panel	01544606P	1
3	Discharge PipeSub-assy	04364103	1
4	Auto Air Outlet Valve	07108208	1
5	Auxiliary Electric Heater DR5	320101091	1
6	Tube-in-tube Connecting PipeSub-assy	05025171	1
7	Check Valve(DN20)	07382807	1
8	Feed Pipe(electric heating)	04364102	1
9	Feed PipeSub-assy	04364101	1
10	Water Pump MHI202(single-phase)	43138218	1
11	Valve Sub-assy(liquid side)	07304121	1
12	Valve Sub-assy(gas side)	07304120	1
13	water flow switch FSF50P-2R1/2	45028207	1
14	Discharge PipeSub-assy	04364107	1
15	expansion drum	072282191	1
16	Support(expansion drum)	01804355P	1
17	SupportSub-assy	01804356P	1
18	ChassisSub-assy	01194139P	1
19	package base frame(wooden)	50232840	1
20	Right Side Plate	01314221P	1
21	Rear Panel	01544605P	1
22	Tube-in-tube condensator	01152807	1
23	Cross Beam Sub-assy	01874182P	2
24	Handle(apricot-gray)	26235253	4
25	Electric box Assy RQ30LA	01394958	1
26	Mains Transformer 48X26G	43110233	1
27	AC contactorCJX9B-25S/D	44010245	1
28	Mainboard Z6P30A	30226228	1
29	Leakage Switch PFIM-40/4/003	45010028	1
30	AC contactorLC1D25M7C	44010213	1
31	Electric box cover	01424317P	1
32	Top cover plate	01264175P	1

★ RQ30LA-K Exploded View



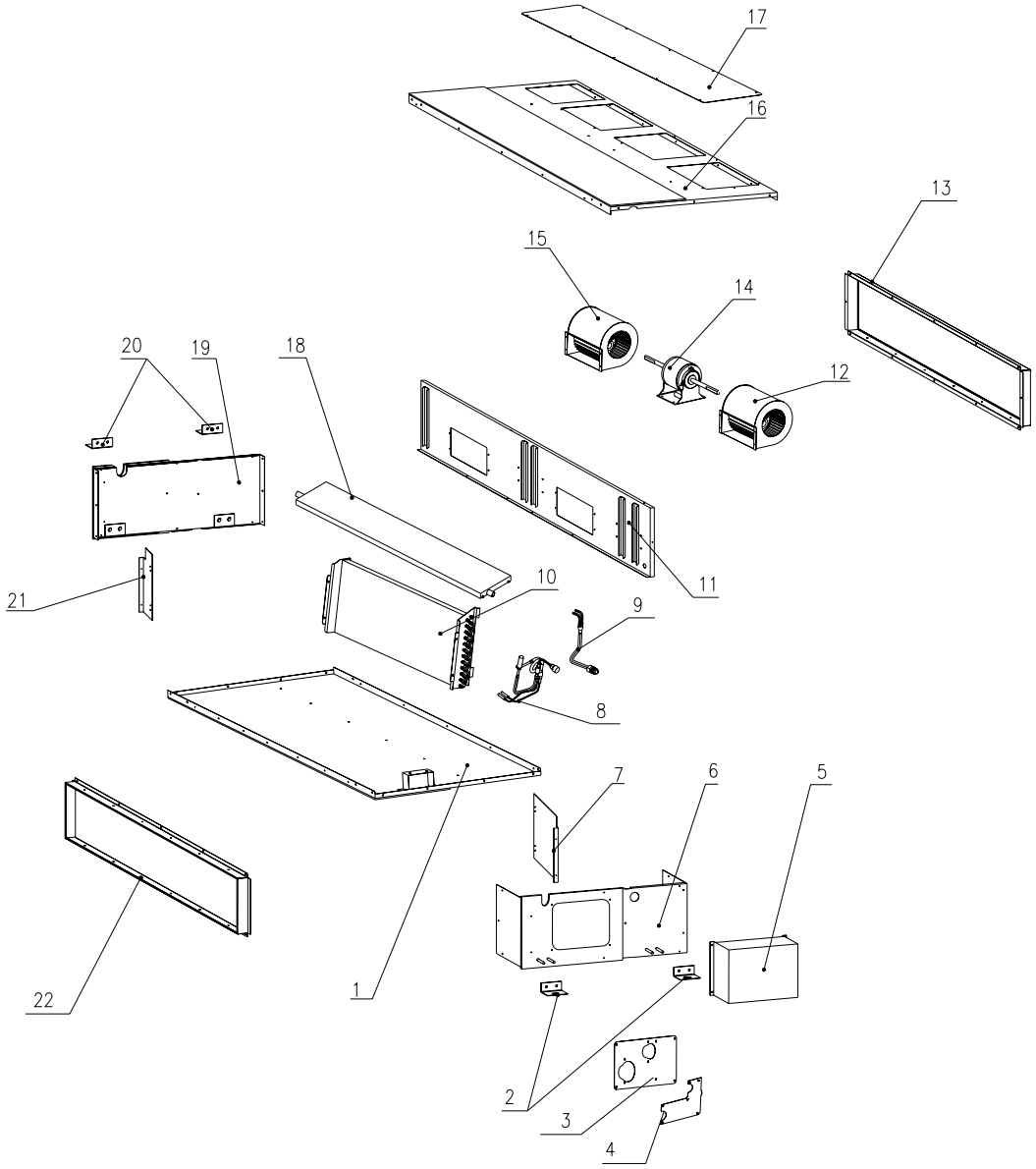
Parts List

No.	Part Name	Code	Qty
1	Right Side Plate	01314302P	1
2	Front Panel	01544606P	1
3	Discharge PipeSub-assy	04364103	1
4	Auto Air Outlet Valve	07108208	1
5	Tube-in-tube Connecting PipeSub-assy	05025171	1
6	Check Valve(DN20)	07382807	1
7	Feed Pipe(electric heating)	04364102	1
8	Feed PipeSub-assy	04364101	1
9	Water Pump MHI202(single-phase)	43138218	1
10	ValveSub-assy(liquid side)	07304121	1
11	ValveSub-assy(gas side)	07304120	1
12	water flow switch FSF50P-2R1/2	45028207	1
13	Discharge PipeSub-assy	04364107	1
14	expansion drum	072282191	1
15	Support(expansion drum)	01804355P	1
16	SupportSub-assy	01804356P	1
17	ChassisSub-assy	01194139P	1
18	package base frame(wooden)	50232840	1
19	Right Side Plate	01314221P	1
20	Rear Panel	01544605P	1
21	Tube-in-tube condensator	01152807	1
22	Cross BeamSub-assy	01874182P	2
23	Handle(apricot-gray)	26235253	4
24	Electric box assy RQ30LA	01394958	1
25	Mains Transformer48X26G	43110233	1
26	Mainboard Z6P30A	30226228	1
27	Leakage Switch PFIM-40/4/003	45010028	1
28	AC contactorLC1D25M7C	44010213	1
29	Electric box cover	01424317P	1
30	Top cover plate	01264175P	1

5.3 Indoor Unit_Exploded view and Parts List

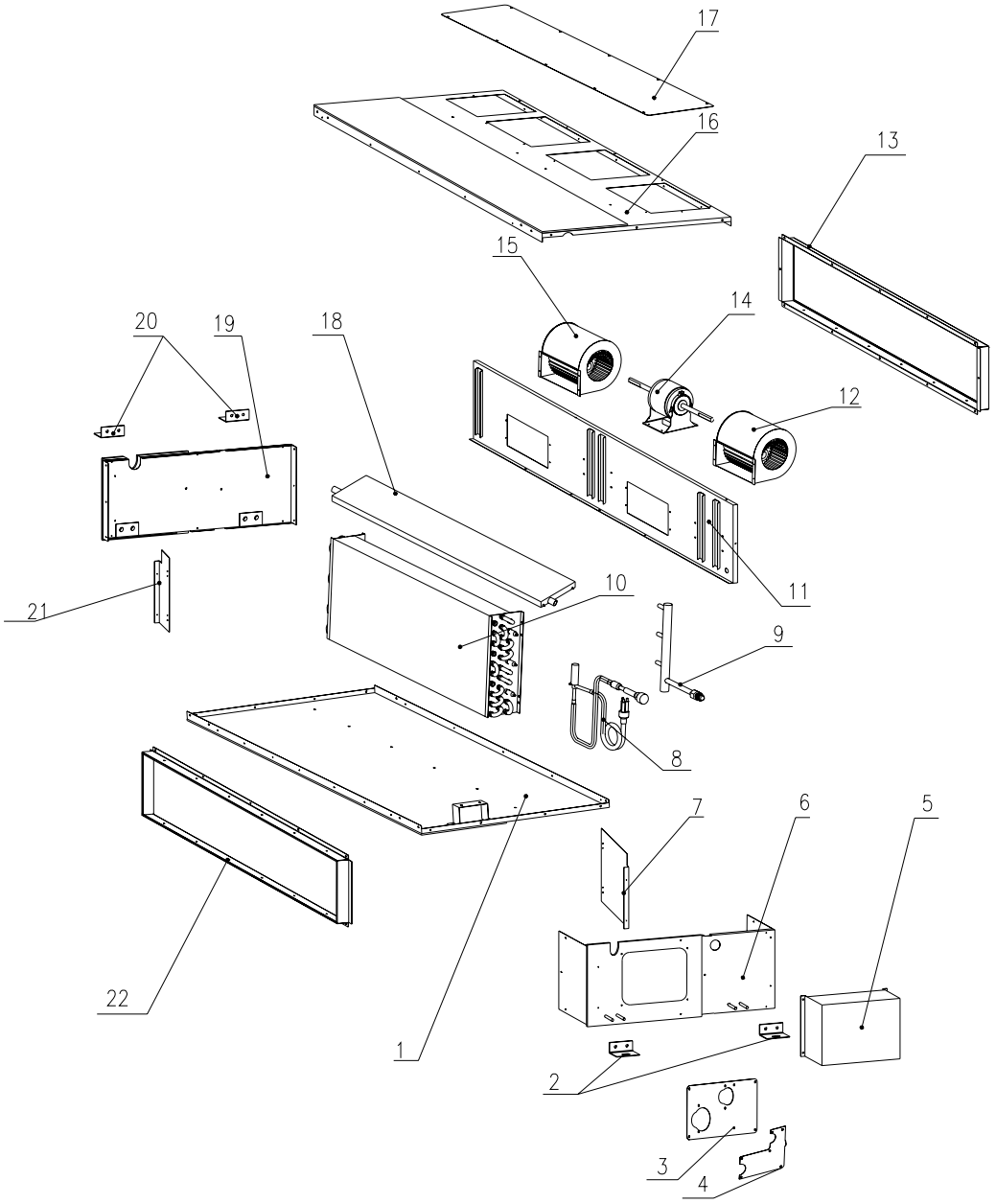
5.3.1 Duct Type Unit

（1）GMV(L)-R22P/Na-K,GMV(L)-R25P/Na-K,GMV(L)-R28P/Na-K,GMV(L)-R32P/Na-K,GMV(L)-R36P/Na-K



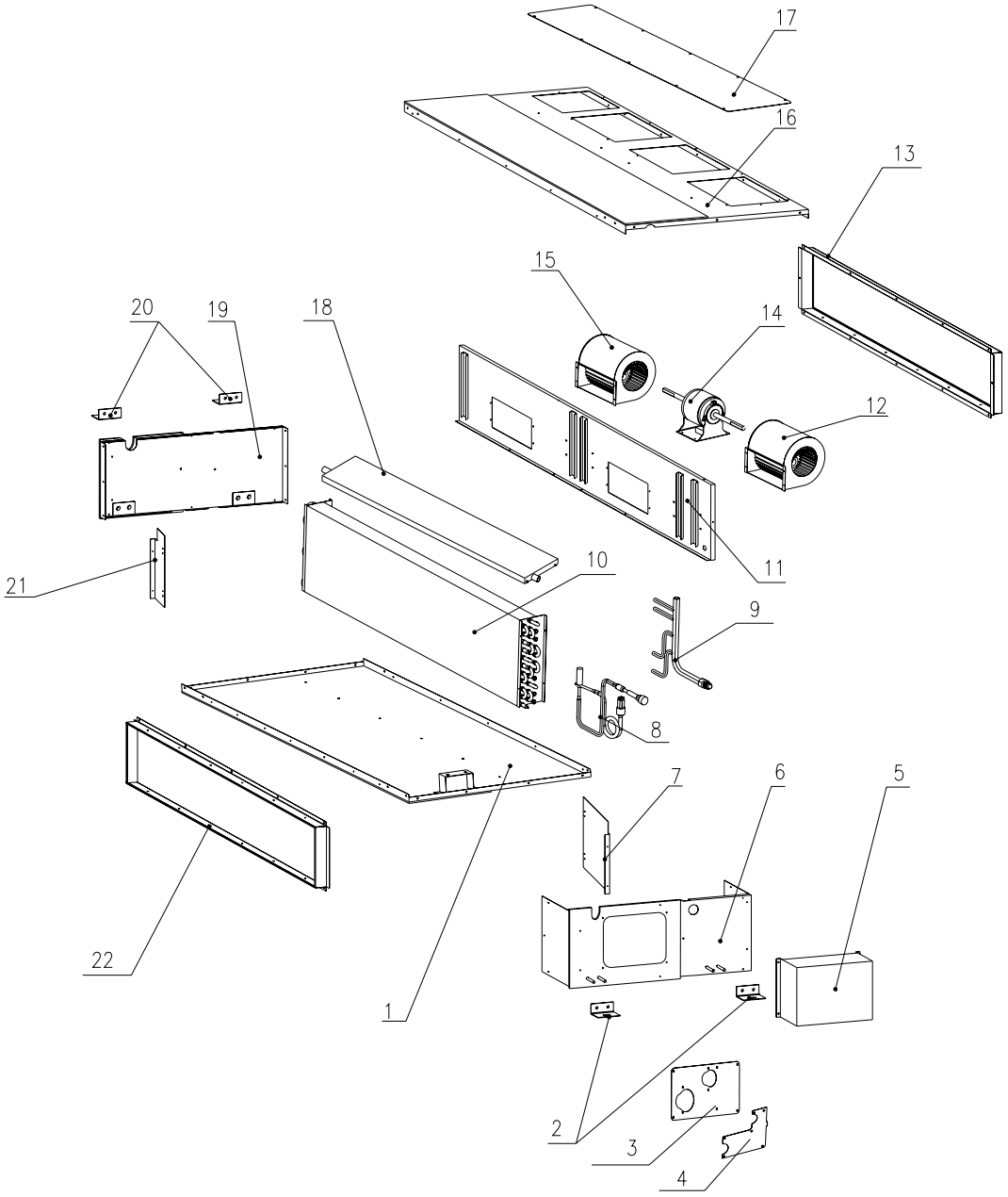
No.	Part Name	GMV(L)-R22P/Na-K,GMV(L)-R25P/Na-K		GMV(L)-R28P/Na-K,GMV(L)-R32P/Na-K,GMV(L)-R36P/Na-K	
		Code	Qty.	Code	Qty.
1	Top Cover Sub-assy	01259052	1	01259052	1
2	Hook	02112446	2	02112446	2
3	Seal of Left Side Plate Sub-assy	01499051	1	01499051	1
4	Seal of Connection Pipe Sub-assy	01499053	1	01499053	1
5	Electric Box Assy	01408739	1	01394605	1
6	Left Side Plate Sub-assy	01308788	1	01308788	1
7	Left Support of Evaporator	01078774	1	01078774	1
8	Liquid-entered Pipe Sub-assy	03334601	1	03338810	1
9	Collect Gas Pipe Sub-assy	01305018	1	04674609	1
10	Evaporator Sub-assy	01038785	1	01038786	1
11	Fan Fixed Plate Sub-assy	01339095	1	01339095	1
12	Centrifugal fan	10319051	1	10319051	1
13	Return air inlet side-board Sub-assy	01499055	1	01499055	1
14	Motor	15019053	1	15019522	1
15	Centrifugal fan	10319051	1	10319051	1
16	Bottom Cover	01259086	1	01259086	1
17	Cover of Air-in	01259056	1	01259056	1
18	Water Tray Assy	01279051	1	01279051	1
19	Right Side Plate Sub-assy	01309055	1	01309055	1
20	Hook	02112446	2	02112446	2
21	Left Support of Evaporator	01079056	1	01079056	1
22	Return air inlet side-board Sub-assy	01498783	1	01498783	1

（2）GMV(L)-R40P/Na-K,GMV(L)-R45P/Na-K,GMV(L)-R50P/Na-K



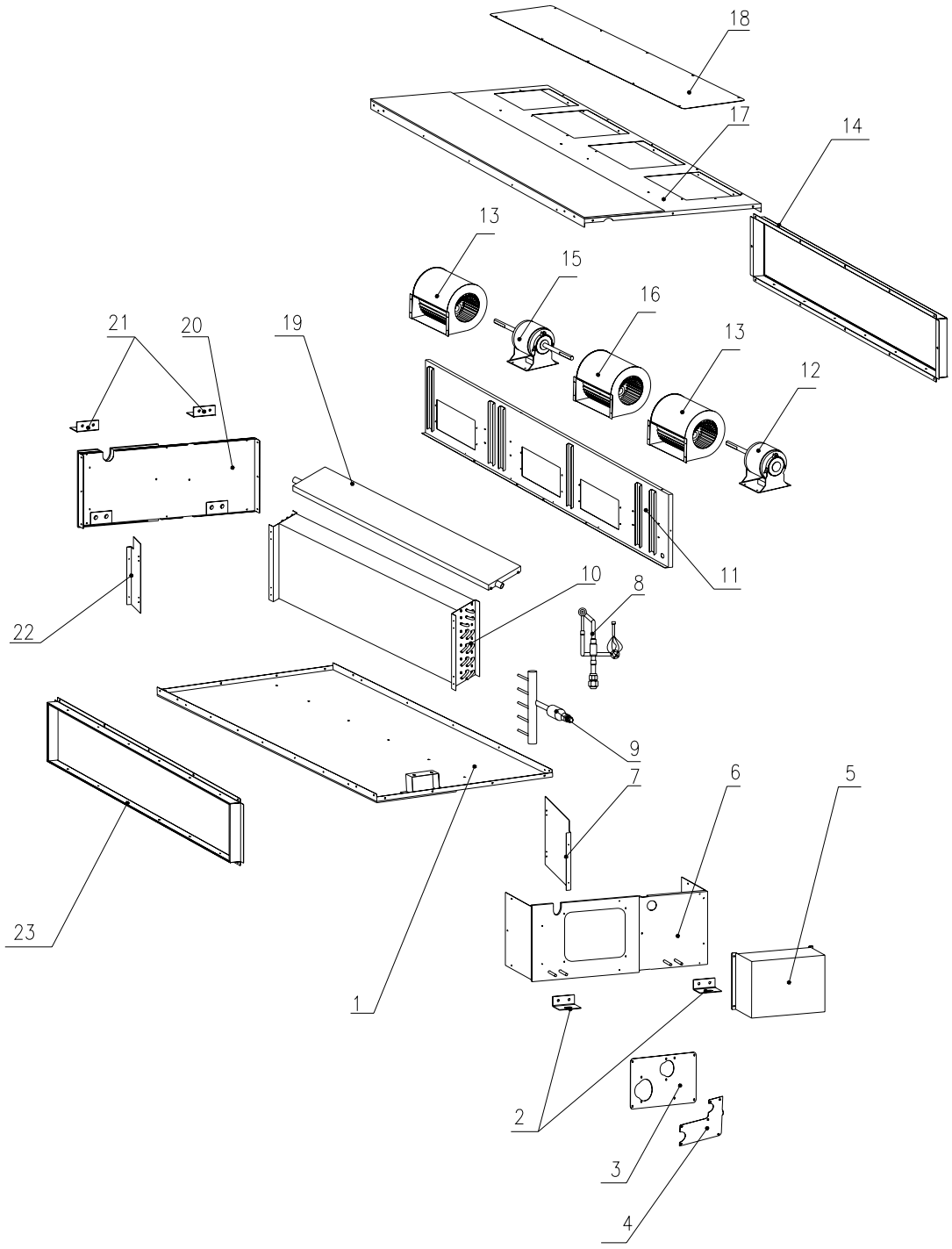
No.	Part Name	GMV(L)-R40P/Na-K,GMV(L)-R45P/Na-K,GMV(L)-R50P/Na-K	
		Code	Qty.
1	Top Cover Sub-assy	01259064	1
2	Hook	02112446	2
3	Seal of Connection Pipe 2	01498644	1
4	Seal of Connection Pipe 1	01498604	1
5	Electric Box Assy	01404688	1
6	Left Side Plate Sub-assy	01308668	1
7	Left Support of Evaporator	01078629	1
8	Liquid-entered Pipe Sub-assy	04324601	1
9	Collect Gas Pipe Sub-assy	04674601	1
10	Evaporator Sub-assy	01038623	1
11	Fan Fixed Plate Sub-assy	01339058	1
12	Centrifugal fan	10319051	1
13	Return air inlet Sub-assy	01499061	1
14	Motor FG70B	15018322	1
15	Centrifugal fan	10319051	1
16	Bottom Cover	01258649	1
17	Cover of Air-in	01258650	1
18	Water Tray Sub-assy	01278633	1
19	Right Side Plate Sub-assy	01308670	1
20	Hook	02112446	2
21	Left Support of Evaporator	01078625	1
22	Return air inlet Sub-assy	01498641	1

（3）GMV(L)-R56P/Na-K,GMV(L)-R63P/Na-K,GMV(L)-R71P/Na-K,GMV(L)-R80P/Na-K



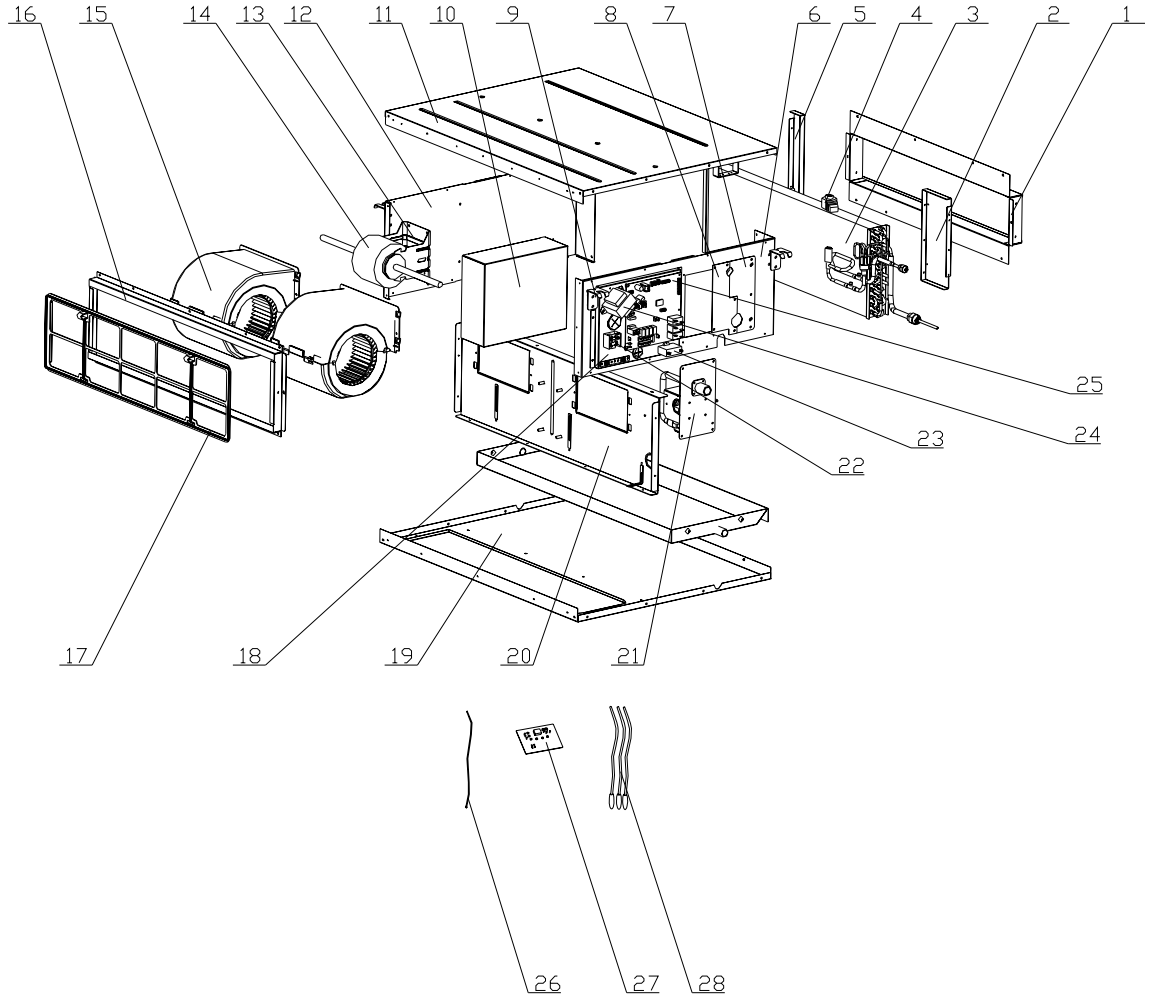
No.	Part Name	GMV(L)-R56P/Na-K,GMV(L)-R63P/Na-K,GMV(L)-R71P/Na-K,GMV(L)-R80P/Na-K	
		Code	Qty.
1	Top Cover Sub-assy	01258652	1
2	Hook	02118504	2
3	Left Side Seal-hole Plate Sub-assy	01308680	1
4	Seal of Connection Pipe	01498610	1
5	Electric Box Assy	01394609	1
6	Left Side Plate Sub-assy	01308676	1
7	Left Support of Evaporator	01078603	1
8	Liquid-entered Pipe Sub-assy	04324603	1
9	Collect Gas Pipe Sub-assy	04674602	1
10	Evaporator Sub-assy	01054601	1
11	Fan Fixed Plate Sub-assy	01338631	1
12	Fan Motor (Left)SYP-200/190J-1	15018603	1
13	Return air inlet side-board Sub-assy	01499074	1
14	Motor FG150B	15018612	1
15	Fan motor (Right)SYP-200/190J-1	15018604	1
16	Bottom Cover	01258612	1
17	Cover of Air-in	01258614	1
18	Water Tray Assy	01278612	1
19	Right Side Plate Sub-assy	01308677	1
20	Hook	02118504	2
21	Left Support of Evaporator	01078604	1
22	Return air inlet Sub-assy	01498612	1

（4）GMV(L)-R90P/Na-K,GMV(L)-R100P/Na-K,GMV(L)-R112P/Na-K,GMV(L)-R125P/Na-K,GMV(L)-R140P/Na-K



No.	Part Name	GMV(L)-R90P/Na-K,GMV(L)-R100P/Na-K, GMV(L)-R112P/Na-K,GMV(L)-R125P/Na-K, GMV(L)-R140P/Na-K	
		Code	Qty.
1	Top Cover Sub-assy	01258606	1
2	Hook	02118504	2
3	Left Side Seal-hole Plate Sub-assy	01308673	1
4	Seal of Connection Pipe	01498601	1
5	Electric Box Assy	01394602	1
6	Left Side Plate Sub-assy	01308676	1
7	Left Support of Evaporator	01078603	1
8	Liquid-entered Pipe Sub-assy	03338802	1
9	Collect Gas Pipe Sub-assy	04674608	1
10	Evaporator Sub-assy	01038624	1
11	Fan Fixed Plate Sub-assy	01338630	1
12	Motor FG75B	15018613	1
13	Fan Motor (Left)SYP-200/190J-1	15018603	2
14	Return air inlet side-board Sub-assy	01499066	1
15	Motor FG150B	15018612	1
16	Fan motor (Right)SYP-200/190J-1	15018604	1
17	Bottom Cover Assy	01258603	1
18	Cover of Air-in	01258602	1
19	Water Tray Assy	01278603	1
20	Right Side Plate Sub-assy	01308677	1
21	Hook	02118504	2
22	Left Support of Evaporator	01078604	1
23	Return air inlet Sub-assy	01498608	1

GMV（L）-R22P/NaB-K, GMV（L）-R22PS/NaB-K, GMV（L）-R28P/NaB-K, GMV（L）-R28PS/NaB-K, GMV（L）-R36P/NaB-K, GMV（L）-R36PS/NaB-K, GMV（L）-R45P/NaB-K, GMV（L）-R45PS/NaB-K, GMV（L）-R56P/NaB-K, GMV（L）-R56PS/NaB-K, GMV（L）-R71P/NaB-K, GMV（L）-R71PS/NaB-K,



No	Part Name	Code	Qty		
			GMV-R22P/NaB-K	GMV-R28P/NaB-K	GMV-R36P/NaB-K
1	Side Plate of Air outlet	01494118	1	1	1
2	Left Support of Evaporator	01094122	1	1	1
3	Evaporator Assy	01024231	1		
		01024232		1	1
4	Electric expand valve fitting	43040001	1	1	1
5	Right Support of Evaporator	01094121	1	1	1
6	Left Side Plate Sub -assy	01314172	1	1	1
7	Seal of left side Plate Sub-assy	01494115	1	1	1
8	Seal of Connection Pipe Sub-assy	01494132	1	1	1
9	Hook	02112446	4	4	4
10	Electric Box Cover	01424319	1	1	
11	Top Cover Board Assy	01264176	1	1	1
12	Right Side Plate Sub -assy	01314175	1	1	1
13	Motor Support	0170905801	1	1	1
14	Fan Motor	1570520103	1		
		1570520201		1	1
15	Motor Sub-assy	150024011	1	1	1
16	Border Plate Assy of Air Return End	02225234	1	1	1
17	Filter	11725202	1	1	1
18	Electric Box	01394978	1	1	1
19	Lower Cover Plate Sub-assy	01264178	1	1	1
20	Fan motor mounting Plate Sub-assy	01324341	1	1	1
21	Water Pump Assy	15404117	0	0	0
22	Terminal Border	42011106	1	1	1
23	Capacitor	33010027	1	1	1
24	Transformer	43110237	1	1	1
25	Main Bord	30226168	1	1	1
26	Connecting Wire	4001039509	1	1	1
27	Display Bord	30296014	1	1	1
28	Sensor sub-assy	39008026	1	1	1

List of components

No	Part Name	Code	Qty		
			GMVL-R22P/NaB-K	GMVL-R28P/NaB-K	GMVL-R36P/NaB-K
1	Side Plate of Air outlet	01494118	1	1	1
2	Left Support of Evaporator	01094122	1	1	1
3	Evaporator Assy	01024231	1		
		01024232		1	1
4	Electric expand valve fitting	43040001	1	1	1
5	Right Support of Evaporator	01094121	1	1	1
6	Left Side Plate Sub-assy	01314172	1	1	1
7	Seal of left side Plate Sub-assy	01494115	1	1	1
8	Seal of Connection Pipe Sub-assy	01494132	1	1	1
9	Hook	02112446	4	4	4
10	Electric Box Cover	01424319	1	1	
11	Top Cover Board Assy	01264176	1	1	1
12	Right Side Plate Sub-assy	01314175	1	1	1
13	Motor Support	0170905801	1	1	1
14	Fan Motor	1570520103	1		
		1570520201		1	1
15	Motor Sub-assy	150024011	1	1	1
16	Border Plate Assy of Air Return End	02225234	1	1	1
17	Filter	11725202	1	1	1
18	Electric Box	01394991	1	1	1
19	Lower Cover Plate Sub-assy	01264178	1	1	1
20	Fan motor mounting Plate Sub-assy	01324341	1	1	1
21	Water Pump Assy	15404117	0	0	0
22	Terminal Border	42011106	1	1	1
23	Capacitor	33010027	1	1	1
24	Transformer	43110237	1	1	1
25	Main Bord	30226167	1	1	1
26	Connecting Wire	4001039509	1	1	1
27	Display Bord	30296013	1	1	1
28	Sensor sub-assy	39008026	1	1	1

No	Part Name	Code	Qty		
			GMVL-R22PS/NaB-K	GMVL-R28PS/NaB-K	GMVL-R36PS/NaB-K
1	Side Plate of Air outlet	01494118	1	1	1
2	Left Support of Evaporator	01094122	1	1	1
3	Evaporator Assy	01024231	1		
		01024230		1	
		01024232			1
4	Electric expand valve fitting	43040001	1	1	1
5	Right Support of Evaporator	01094121	1	1	1
6	Left Side Plate Sub-assy	01314172	1	1	1
7	Seal of left side Plate Sub-assy	01494115	1	1	1
8	Seal of Connection Pipe Sub-assy	01494116	1	1	1
9	Hook	02112446	4	4	4
10	Electric Box Cover	01424319	1	1	
11	Top Cover Board Assy	01264176	1	1	1
12	Right Side Plate Sub-assy	01314175	1	1	1
13	Motor Support	0170905801	1	1	1
14	Fan Motor	1570520103	1		
		1570520201		1	1
15	Motor Sub-assy	150024011	1	1	1
16	Border Plate Assy of Air Return End	02225234	1	1	1
17	Filter	11725202	1	1	1
18	Electric Box	01394994	1	1	1
19	Lower Cover Plate Sub-assy	01264178	1	1	1
20	Fan motor mounting Plate Sub-assy	01324341	1	1	1
21	Water Pump Assy	15404117	1	1	1
22	Terminal Border	42011106	1	1	1
23	Capacitor	33010027	1	1	1
24	Transformer	43110237	1	1	1
25	Main Bord	30226221	1	1	1
26	Connecting Wire	4001039509	1	1	1
27	Display Bord	30296013	1	1	1
28	Sensor sub-assy	39008026	1	1	1

No	Part Name	Code	Qty		
			GMV-R22PS/NaB-K	GMV-R28PS/NaB-K	GMV-R36PS/NaB-K
1	Side Plate of Air outlet	01494118	1	1	1
2	Left Support of Evaporator	01094122	1	1	1
3	Evaporator Assy	01024231	1		
		01024230		1	
		01024232			1
4	Electric expand valve fitting	43040001	1	1	1
5	Right Support of Evaporator	01094121	1	1	1
6	Left Side Plate Sub-assy	01314172	1	1	1
7	Seal of left side Plate Sub-assy	01494115	1	1	1
8	Seal of left Connection Pipe Sub-assy	01494116	1	1	1
9	Hook	02112446	4	4	4
10	Electric Box Cover	01424319	1	1	
11	Top Cover Board Assy	01264176	1	1	1
12	Right Side Plate Sub -assy	01314175	1	1	1
13	Motor Support	0170905801	1	1	1
14	Fan Motor	1570520103	1		
		1570520201		1	1
15	Motor Sub-assy	150024011	1	1	1
16	Border Plate Assy of Air Return End	02225234	1	1	1
17	Filter	11725202	1	1	1
18	Electric Box	01394977	1	1	1
19	Lower Cover Plate Sub-assy	01264178	1	1	1
20	Fan motor mounting Plate Sub-assy	01324341	1	1	1
21	Water Pump Assy	15404117	1	1	1
22	Terminal Border	42011106	1	1	1
23	Capacitor	33010027	1	1	1
24	Transformer	43110237	1	1	1
25	Main Bord	30226222	1	1	1
26	Connecting Wire	4001039509	1	1	1
27	Display Bord	30296014	1	1	1
28	Sensor sub-assy	39008026	1	1	1

No	Part Name	Code	Qty	
			GMVL-R45PS/NaB-K	GMVL-R45P/NaB-K
1	Side Plate of Air outlet	01498641	1	1
2	Left Support of Evaporator	01805280	1	1
3	Evaporator Sub-assy	01024211	1	1
4	Electric expand valve fitting	43040001	1	1
5	Right Support of Evaporator	01078625	1	1
6	Left Side Plate Sub -assy	01314230	1	1
7	Seal of left side Plate Sub-assy	01494128	1	1
8	Seal of Connection Pipe Sub-assy	01498640	1	1
9	Hook	02112466	4	4
10	Electric Box Cover	01425249	1	1
11	Top Cover Board Assy	01259064	1	1
12	Right Side Plate Sub -assy	01308670	1	1
13	Motor Support	01709056	1	1
14	Fan Motor	1501832202	1	1
15	Motor Sub-assy	15002401	2	2
16	Border Plate Assy of Air Return End	02225234	1	1
17	Filter	11725202	1	1
18	Electric Box	01394739	1	1
19	Lower Cover Plate Sub-assy	01265296	1	1
20	Fan motor mounting Plate Sub-assy	01339058	1	1
21	Water Pump Assy	15404121	1	0
22	Terminal Border	42011106	1	1
23	Capacitor	33010010	1	1
24	Transformer	43110237	1	1
25	Main Bord	30226221	1	
		30226167		1
26	Connecting Wire	4001039509	1	1
27	Display Bord	30296013	1	1
28	Sensor sub-assy	39004167	1	1

No	Part Name	Code	Qty	
			GMV-R45PS/NaB-K	GMV-R45P/NaB-K
1	Side Plate of Air outlet	01498641	1	1
2	Left Support of Evaporator	01805280	1	1
3	Evaporator Assy	01024211	1	1
4	Electric expand valve fitting	43040001	1	1
5	Right Support of Evaporator	01078625	1	1
6	Left Side Plate Sub-assy	01314230	1	1
7	Seal of left side Plate Sub-assy	01494128	1	1
8	Seal of Connection Pipe Sub-assy	01498640	1	1
9	Hook	02112466	4	4
10	Electric Box Cover	01425249	1	1
11	Top Cover Board Assy	01259064	1	1
12	Right Side Plate Sub -assy	01308670	1	1
13	Motor Support	01709056	1	1
14	Fan Motor	1501832202	1	1
15	Motor Sub-assy	15002401	2	2
16	Border Plate Assy of Air Return End	02225234	1	1
17	Filter	11725202	1	1
18	Electric Box	01394739	1	1
19	Lower Cover Plate Sub-assy	01265296	1	1
20	Fan motor mounting Plate Sub-assy	01339058	1	1
21	Water Pump Assy	15404121	1	0
22	Terminal Border	42011106	1	1
23	Capacitor	33010010	1	1
24	Transformer	43110237	1	1
25	Main Bord	30226222	1	
		30226168		1
26	Connecting Wire	4001039509	1	1
27	Display Bord	30296013	1	1
28	Sensor sub-assy	39004167	1	1

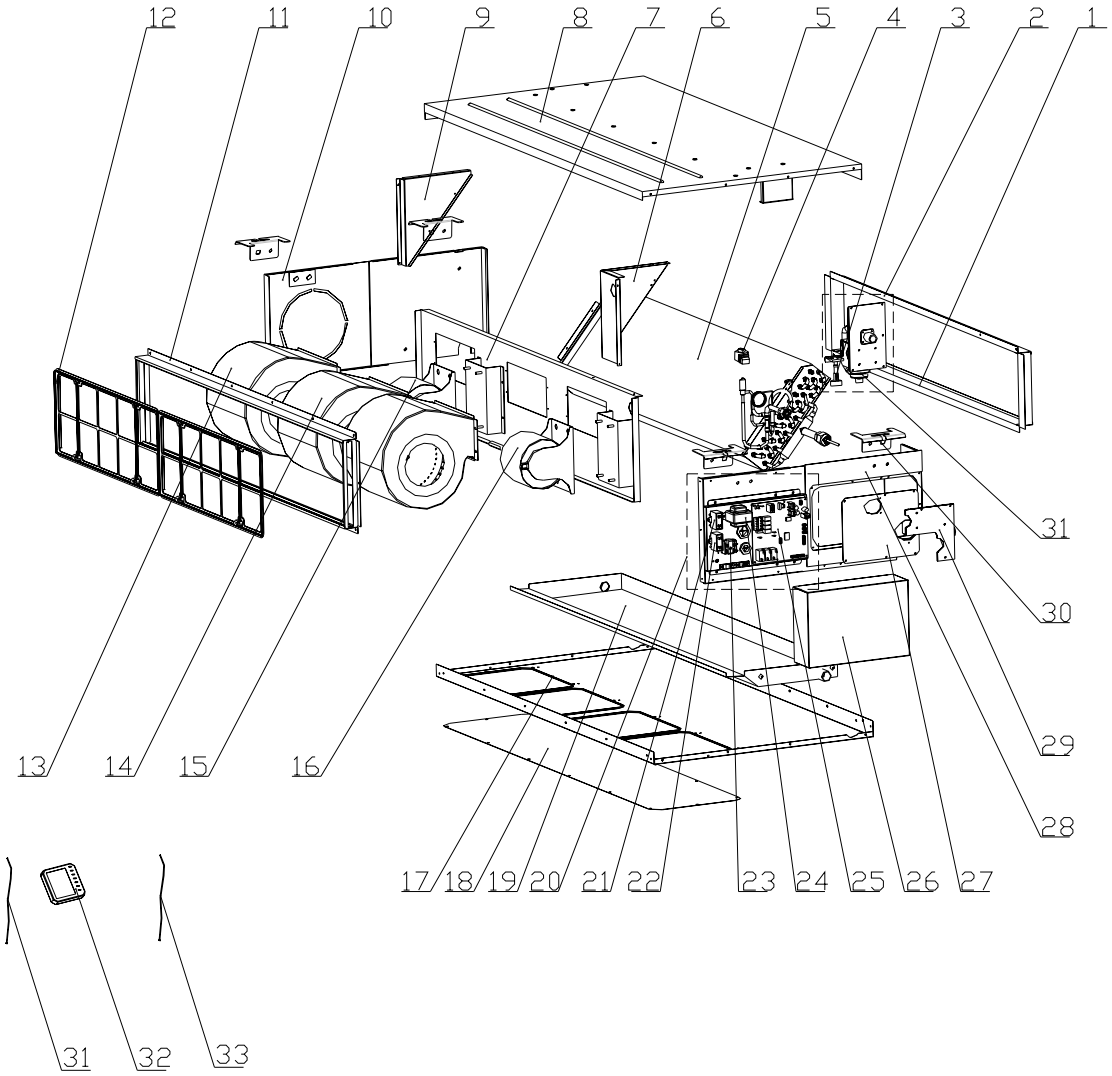
No	Part Name	Code	Qty	
			GMVL-R56P/NaB-K	GMVL-R71P/NaB-K
1	Side Plate of Air outlet	01499074	1	1
2	Left Support of Evaporator	01078603	1	1
3	Evaporator Assy	01024221	1	1
4	Electric expand valve fitting	43040001	1	1
5	Right Support of Evaporator	01078604	1	1
6	Left Side Plate Sub-assy	01315255	1	1
7	Seal of left side Plate Sub-assy	01308680	1	1
8	Seal of left Connection Pipe Sub-assy	01498610	1	1
9	Hook	02112466	4	4
10	Electric Box Cover	01425249	1	1
11	Top Cover Board Assy	01258651	1	1
12	Right Side Plate Sub -assy	01308679	1	1
13	Motor Support	01708502	1	1
14	Fan Motor	1570521101	1	1
15	Motor Sub-assy	15018603	1	1
		15018604	1	1
16	Border Plate Assy of Air Return End	01499074	1	1
17	Filter	11129066	1	1
18	Electric Box	01394962	1	1
19	Lower Cover Plate Sub-assy	01258612	1	1
20	Fan motor mounting Plate Sub-assy	01338632	1	1
21	Water Pump Assy	15404119	0	0
22	Terminal Border	42011106	1	1
23	Capacitor	33010014	1	1
24	Transformer	43110239	1	1
25	Main Bord	30226167	1	1
26	Connecting Wire	4001039509	1	1
27	Display Bord	30296013	1	1
28	Sensor sub-assy	39004167	1	1

No	Part Name	Code	Qty	
			GMV-R56P/NaB-K	GMV-R71P/NaB-K
1	Side Plate of Air outlet	01499074	1	1
2	Left Support of Evaporator	01078603	1	1
3	Evaporator Sub-assy	01024234	1	1
4	Electric expand valve fitting	43040001	1	1
5	Right Support of Evaporator	01078604	1	1
6	Left Side Plate Sub-assy	01314225	1	1
7	Seal of left side Plate Sub-assy	01494131	1	1
8	Seal of left Connection Pipe Sub-assy	01494129	1	1
9	Hook	02112466	4	4
10	Electric Box Cover	01425249	1	1
11	Top Cover Board Assy	01258651	1	1
12	Right Side Plate Sub-assy	01308679	1	1
13	Motor Support	01708502	1	1
14	Fan Motor	1570521101	1	1
15	Motor Sub-assy	15018603	1	1
		15018604	1	1
16	Border Plate Assy of Air Return End	01499074	1	1
17	Filter	11129066	1	1
18	Electric Box	01394997	1	1
19	Lower Cover Plate Sub-assy	01258612	1	1
20	Fan motor mounting Plate Sub-assy	01324350	1	1
21	Water Pump Assy	15404119	0	0
22	Terminal Border	42011106	1	1
23	Capacitor	33010014	1	1
24	Transformer	43110239	1	1
25	Main Bord	30226168	1	1
26	Connecting Wire	4001039509	1	1
27	Display Bord	30296014	1	1
28	Sensor sub-assy	39004167	1	1

No	Part Name	Code	Qty	
			GMV-R56PS/NaB-K	GMV-R71PS/NaB-K
1	Side Plate of Air outlet	01499074	1	1
2	Left Support of Evaporator	01078603	1	1
3	Evaporator Sub-assy	01024234	1	1
4	Electric expand valve fitting	43040001	1	1
5	Right Support of Evaporator	01078604	1	1
6	Left Side Plate Sub-assy	01314225	1	1
7	Seal of left side Plate Sub-assy	01494131	1	1
8	Seal of left Connection Pipe Sub-assy	01494129	1	1
9	Hook	02112466	4	4
10	Electric Box Cover	01425249	1	1
11	Top Cover Board Assy	01258651	1	1
12	Right Side Plate Sub -assy	01308679	1	1
13	Motor Support	01708502	1	1
14	Fan Motor	1570521101	1	1
15	Motor Sub-assy	15018603	1	1
		15018604	1	1
16	Border Plate Assy of Air Return End	01499074	1	1
17	Filter	11129066	1	1
18	Electric Box	01394987	1	1
19	Lower Cover Plate Sub-assy	01258612	1	1
20	Fan motor mounting Plate Sub-assy	01324350	1	1
21	Water Pump Assy	15404119	1	1
22	Terminal Border	42011106	1	1
23	Capacitor	33010014	1	1
24	Transformer	43110239	1	1
25	Main Bord	30226222	1	1
26	Connecting Wire	4001039509	1	1
27	Display Bord	30296014	1	1
28	Sensor sub-assy	39004167	1	1

No	Part Name	Code	Qty	
			GMVL-R56PS/NaB-K	GMVL-R71PS/NaB-K
1	Side Plate of Air outlet	01499074	1	1
2	Left Support of Evaporator	01078603	1	1
3	Evaporator Assy	01024234	1	1
4	Electric expand valve fitting	43040001	1	1
5	Right Support of Evaporator	01078604	1	1
6	Left Side Plate Sub-assy	01314225	1	1
7	Seal of left side Plate Sub-assy	01494131	1	1
8	Seal of Connection Pipe Sub-assy	01494129	1	1
9	Hook	02112466	4	4
10	Electric Box Cover	01425249	1	1
11	Top Cover Board Assy	01258651	1	1
12	Right Side Plate Sub -assy	01308679	1	1
13	Motor Support	01708502	1	1
14	Fan Motor	1570521101	1	1
15	Motor Sub-assy	15018603	1	1
		15018604	1	1
16	Border Plate Assy of Air Return End	01499074	1	1
17	Filter	11129066	1	1
18	Electric Box	01394997	1	1
19	Lower Cover Plate Sub-assy	01258612	1	1
20	Fan motor mounting Plate Sub-assy	01324350	1	1
21	Water Pump Assy	15404119	1	1
22	Terminal Border	42011106	1	1
23	Capacitor	33010014	1	1
24	Transformer	43110239	1	1
25	Main Bord	30226221	1	1
26	Connecting Wire	4001039509	1	1
27	Display Bord	30296013	1	1
28	Sensor sub-assy	39004167	1	1

GMV（L）-R90P/NaB-K, GMV（L）-R90PS/NaB-K, GMV（L）-R112P/NaB-K, GMV（L）-R112PS/NaB-K, GMV（L）-R140P/NaB-K, GMV（L）-R140PS/NaB-K,



No	Part Name	Code	Qty		
			GMVL-R90P/NaB-K	GMVL-R112P/NaB-K	GMVL-R140P/NaB-K
1	Air outlet side board assy	01498608	1	1	1
2	Water pump assy	15404119	0	0	0
3	Water level switch	45010201	0	0	0
4	Electric expand valve fitting	43040001	1	1	1
5	Evaporator assy	01024222	1	1	
		01024218			1
6	Left support of evaporator	01805279	1	1	
		01804703			1
7	Fan motor mounting Plate Sub-assy	01324356	1	1	
		01804703			1
8	Top Cover Board Assy	01258607	1	1	
		01264627			1
9	Right support of evaporator	01078604	1	1	
		01805221			1
10	Right Side Plate Sub-assy	01308679	1	1	
11	Air intake side-board sub-assy	01375221	1	1	1
12	Filter Sub-assy	11725205	1	1	1
13	Fan Motor	15018603	2	2	2
14	Fan Motor	15018604	1	1	1
15	Motor	1570521101	1	1	
		1570520901			1
16	Motor	1570521201	1	1	
		1570521001			1
17	Bottom cover plate assy	01258603	1	1	
		0125860301			1
18	Cover of air-in	01258602	1	1	1
19	Water tray assy	01278603	1	1	
		01285229			1
20	Electric box assy	01394963	1	1	
		01394964			1
21	Capacitor	33010014	1	1	
		33010056			1
22	Capacitor	33010064	1	1	1
23	Terminal board	42011106	1	1	1
24	Transformer	43110239	1	1	1
25	Main board	30226167	1	1	1
26	Electric box cover	01425249	1	1	1
27	Seal of lefr side plate sub-assy	01308672	1	1	
		01495212			1
28	Left side plate assy	01315255	1	1	1
29	Seal of connection pipe	01498601	1	1	
		01495213			1
30	Hook	02118504	4	4	4
31	Connecting Wire	4001039509	1	1	1
32	Display board	30296013	1	1	1
33	Sersor sub-assy	39004167	1	1	1

No	Part Name	Code	Qty		
			GMVL-R90PS/NaB-K	GMVL-R112PS/NaB-K	GMVL-R140PS/NaB-K
1	Air outlet side board assy	01498608	1	1	1
2	Water pump assy	15404119	1	1	
		15404118			1
3	Water level switch	45010201	1	1	
		450102012			1
4	Electric expand valve fitting	43040001	1	1	1
5	Evaporator assy	01024233	1	1	
		01024218			1
6	Left support of evaporator	01805279	1	1	
		01804703			1
7	Fan motor mounting Plate Sub-assy	01324356	1	1	
		01325293			1
8	Top Cover Board Assy	01258607	1	1	
		01264627			1
9	Right support of evaporator	01078604	1	1	
		01805221			1
10	Right Side Plate Sub-assy	01308679	1	1	
11	Air intake side-board sub-assy	01375221	1	1	1
12	Filter Sub-assy	11725205	1	1	1
13	Fan Motor	15018603	2	2	2
14	Fan Motor	15018604	1	1	1
15	Motor	1570521101	1	1	
		1570520901			1
16	Motor	1570521201	1	1	
		1570521001			1
17	Bottom cover plate assy	01258603	1	1	
		0125860301			1
18	Cover of air-in	01258602	1	1	1
19	Water tray assy	01284160	1	1	
		01284157			1
20	Electric box assy	01394998	1	1	
		01394999			1
21	Capacitor	33010014	1	1	
		33010056			1
22	Capacitor	33010064	1	1	1
23	Terminal board	42011106	1	1	1
24	Transformer	43110239	1	1	1
25	Main board	30226221	1	1	1
26	Electric box cover	01425249	1	1	1
27	Seal of lefr side plate sub-assy	01494125	1	1	
		01494121			1
28	Left side plate assy	01494124	1	1	
		01314222			1
29	Seal of connection pipe	01494123	1	1	
		01494120			1
30	Hook	02118504	4	4	4
31	Connecting Wire	4001039509	1	1	1
32	Display board	30296013	1	1	1
33	Sersor sub-assy	39004167	1	1	1

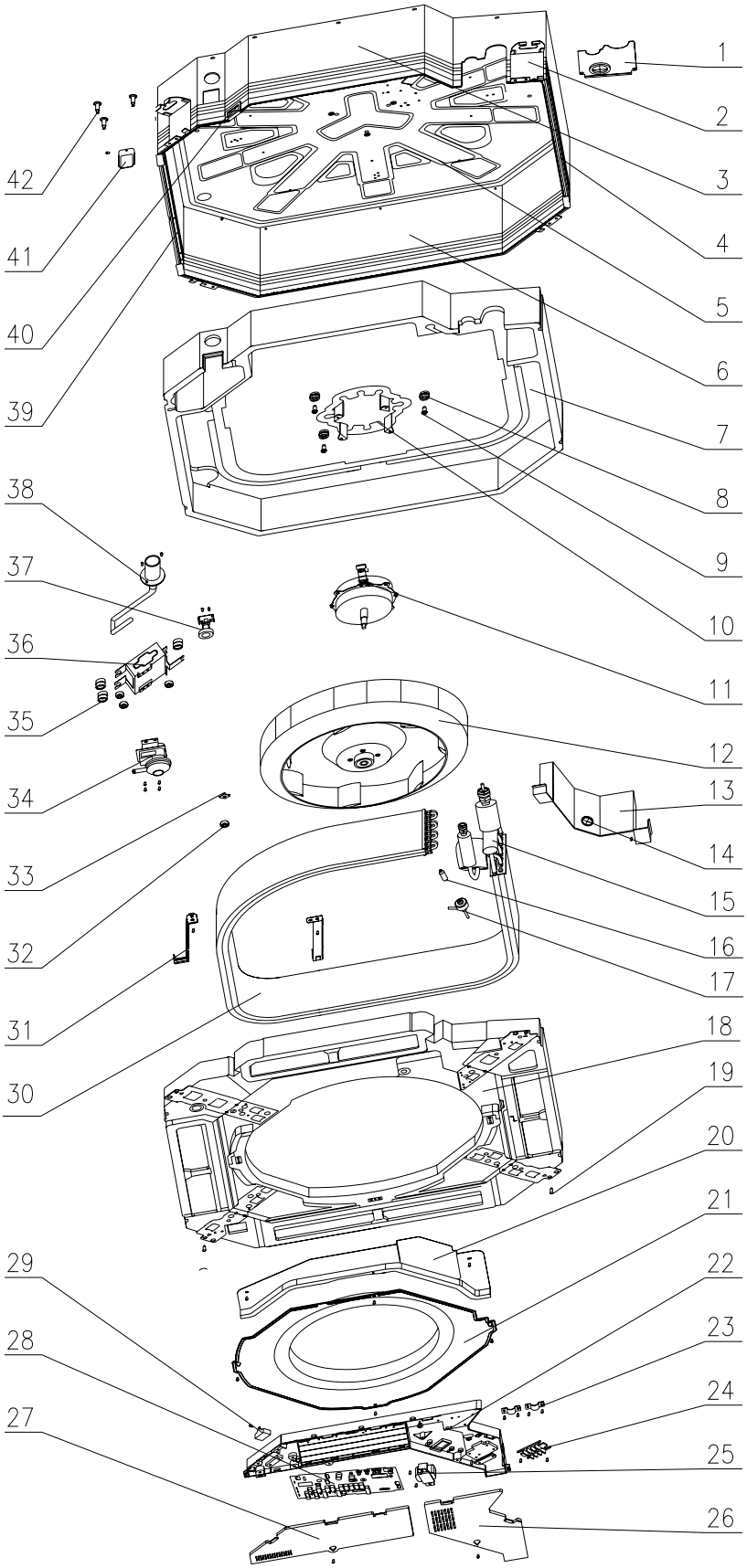
No	Part Name	Code	Qty		
			GMV-R90P/Na B-K	GMV-R112P/Na B-K	GMV-R140P/Na B-K
1	Air outlet side board assy	01498608	1	1	1
2	Water pump assy	15404119	0	0	0
3	Water level switch	45010201	0	0	0
4	Electric expand valve fitting	43040001	1	1	1
5	Evaporator assy	01024222	1	1	
		01024218			1
6	Left support of evaporator	01805279	1	1	
		01804703			1
7	Fan motor mounting Plate Sub-assy	01324356	1	1	
		01325293			1
8	Top Cover Board Assy	01258607	1	1	
		01264627			1
9	Right support of evaporator	01078604	1	1	
		01805221			1
10	Right Side Plate Sub-assy	01308679	1	1	
11	Air intake side-board sub-assy	01375221	1	1	1
12	Filter Sub-assy	11725205	1	1	1
13	Fan Motor	15018603	2	2	2
14	Fan Motor	15018604	1	1	1
15	Motor	1570521101	1	1	
		1570520901			1
16	Motor	1570521201	1	1	
		1570521001			1
17	Bottom cover plate assy	01258603	1	1	
		0125860301			1
18	Cover of air-in	01258602	1	1	1
19	Water tray assy	01284160	1	1	
		01285229			1
20	Electric box assy	01394957	1	1	
		01394896			1
21	Capacitor	33010014	1	1	
		33010056			1
22	Capacitor	33010064	1	1	1
23	Terminal board	42011106	1	1	1
24	Transformer	43110239	1	1	1
25	Main board	30226168	1	1	1
26	Electric box cover	01425249	1	1	1
27	Seal of lefr side plate sub-assy	01308672	1	1	
		01495212			1
28	Left side plate assy	01315255	1	1	1
29	Seal of connection pipe	01498601	1	1	
		01495213			1
30	Hook	02118504	4	4	4
31	Connecting Wire	4001039509	1	1	1
32	Display board	30296014	1	1	1
33	Sersor sub-assy	39004167	1	1	1

No	Part Name	Code	Qty

			GMV-R90PS/NaB-K	GMV-R112PS/NaB-K	GMV-R140PS/NaB-K
1	Air outlet side board assy	01498608	1	1	1
2	Water pump assy	15404119	1	1	
		15404118			1
3	Water level switch	45010201	1	1	
		450102012			1
4	Electric expand valve fitting	43040001	1	1	1
5	Evaporator assy	01024233	1	1	
		01024218			1
6	Left support of evaporator	01805279	1	1	
		01804703			1
7	Fan motor mounting Plate Sub-assy	01324356	1	1	
		01325293			1
8	Top Cover Board Assy	01258607	1	1	
		01264627			1
9	Right support of evaporator	01078604	1	1	
		01805221			1
10	Right Side Plate Sub-assy	01308679	1	1	
11	Air intake side-board sub-assy	01375221	1	1	1
12	Filter Sub-assy	11725205	1	1	1
13	Fan Motor	15018603	2	2	2
14	Fan Motor	15018604	1	1	1
15	Motor	1570521101	1	1	
		1570520901			1
16	Motor	1570521201	1	1	
		1570521001			1
17	Bottom cover plate assy	01258603	1	1	
		0125860301			1
18	Cover of air-in	01258602	1	1	1
19	Water tray assy	01284160	1	1	
		01284157			1
20	Electric box assy	01394986	1	1	
		01024218			1
21	Capacitor	33010014	1	1	
		33010056			1
22	Capacitor	33010064	1	1	1
23	Terminal board	42011106	1	1	1
24	Transformer	43110239	1	1	1
25	Main board	30226222	1	1	1
26	Electric box cover	01425249	1	1	1
27	Seal of lefr side plate sub-assy	01494124	1	1	
		01494121			1
28	Left side plate assy	01314225	1	1	
		01314222			1
29	Seal of connection pipe	01494120	1	1	
		01494123			1
30	Hook	02118504	4	4	4
31	Connecting Wire	4001039509	1	1	1
32	Display board	30296014	1	1	1
33	Sersor sub-assy	39004167	1	1	1

5.3.2 Four-way Cassette Unit_ Exploded View and Parts List

（1） GMV(L)-R28T/Na-K, GMV(L)-R36T/Na-K, GMV(L)-R45T/Na-K, GMV(L)-R50T/Na-K, GMV(L)-R56T/Na-K, GMV(L)-R71T/Na-K, GMV(L)-R80T/Na-K

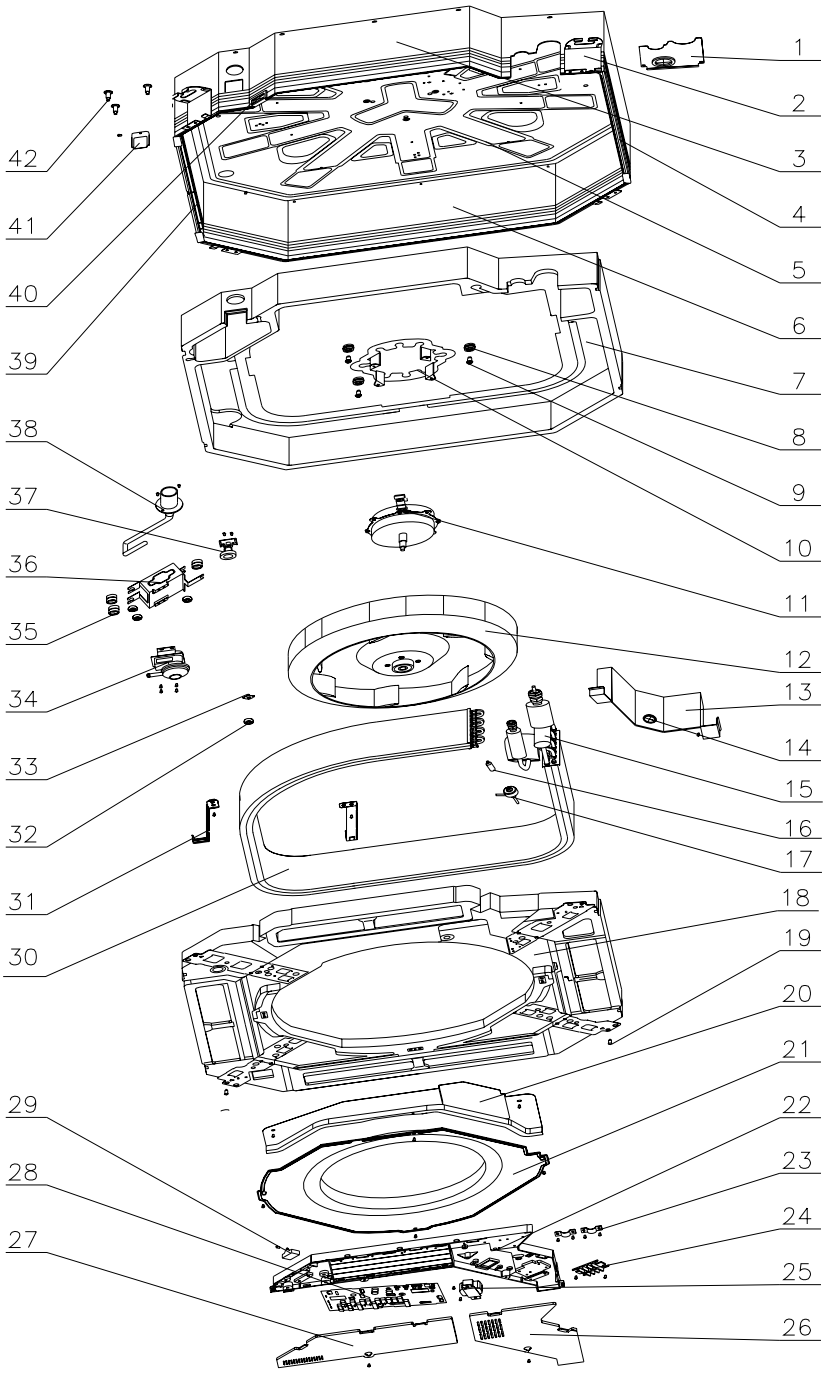


No.	Part Name	GMV-R28T/Na-K,GMV-R36T/Na-K		GMVL-R28T/Na-K,GMVL-R36T/Na-K	
		Code	Qty.	Code	Qty.
1	Tube Exit Plate	01382710	1	01382710	1
2	Body Fixed Plate	01332701	4	01332701	4
3	Front Side Plate	01302717	1	01302717	1
4	Left Side Plate	01302740	1	01302740	1
5	Base Plate	01222702	1	01222702	1
6	Rear Side Plate	01302719	1	01302719	1
7	Bottom Foam	52012716	1	52012716	1
8	Motor Gasket	76712711	3	76712711	3
9	Bolt	70212701	3	70212701	3
10	Motor Fixer	01702701	1	01702701	1
11	Fan Motor	15704901	1	15704901	1
12	Centrifugal Fan	10312721	1	10312721	1
13	Evaporator Connection	01072004	1	01072004	1
14	Cable-cross Loop	76513101	2	76513101	2
15	shunt	072287842	1	072287842	1
16	Water Tray	12412701	1	12412701	1
17	Screw	70140032	4	70140032	4
18	Electric Box Base Plate	01412721	1	01412721	1
19	Flow Guide Loop	10372701	1	10372701	1
20	Electric Box	20102701	1	20102701	1
21	Wire Clamp	71010102	4	71010102	4
22	Terminal Board T360B	42011222	1	42011222	1
23	Transformer	43110233	1	43110233	1
24	Electric Box Cover I	20102702	1	20102702	1
25	Electric Box Cover II	20102703	1	20102703	1
26	Main Board	30226316	1	30226316	1
27	Capacitor	33010010	1	33010010	1
28	Rubber plug	76712701	1	76712701	1
29	Evaporator	01038778	1	01038778	1
30	Evaporator Support	01072003	2	01072003	2
31	Nut with Washer M6	70310012	1	70310012	1
32	Bolt subassembly	70210051	1	70210051	1
33	Pipe Pump PJV-1415	43130324	1	43130324	1
34	Pump Gasket	76712702	3	76712702	3
35	Pump Support	01332001	1	01332001	1
36	Water Level Switch	45010201	1	45010201	1
37	Drainage hose Pump	05232721	1	05232721	1
38	Right Side Plate	01302710	1	01302710	1
39	Cable-cross Loop	76512702	1	76512702	1
40	Pump Cover	01252710	1	01252710	1
41	Bolt	70212701	3	70212701	3
42	Electronic Expansive Valve	0713411201	1	0713411201	1

No.	Part Name	GMV-R45T/Na-K,GMV-R50T/Na-K		GMVL-R45T/Na-K,GMVL-R50T/Na-K	
		Code	Qty.	Code	Qty.
1	Tube Exit Plate	01382710	1	01382710	1
2	Body Fixed Plate	01332701	4	01332701	4
3	Front Side Plate	01302717	1	01302717	1
4	Left Side Plate	01302740	1	01302740	1
5	Base Plate	01222702	1	01222702	1
6	Rear Side Plate	01302719	1	01302719	1
7	Bottom Foam	52012716	1	52012716	1
8	Motor Gasket	76712711	3	76712711	3
9	Bolt	70212701	3	70212701	3
10	Motor Fixer	01702701	1	01702701	1
11	Fan Motor	15704901	1	15704901	1
12	Centrifugal Fan	10312721	1	10312721	1
13	Evaporator Connection	01072004	1	01072004	1
14	Cable-cross Loop	76513101	2	76513101	2
15	shunt	07228807	1	07228807	1
16	Water Tray	12412701	1	12412701	1
17	Screw	70140032	4	70140032	4
18	Electric Box Base Plate	01412721	1	01412721	1
19	Flow Guide Loop	10372701	1	10372701	1
20	Electric Box	20102701	1	20102701	1
21	Wire Clamp	71010102	4	71010102	4
22	Terminal Board T360B	42011222	1	42011222	1
23	Transformer	43110233	1	43110233	1
24	Electric Box Cover I	20102702	1	20102702	1
25	Electric Box Cover II	20102703	1	20102703	1
26	Main Board	30226316	1	30226316	1
27	Capacitor	33010010	1	33010010	1
28	Rubber plug	76712701	1	76712701	1
29	Evaporator	01038778	1	01038778	1
30	Evaporator Support	01072003	2	01072003	2
31	Nut with Washer M6	70310012	1	70310012	1
32	Bolt subassembly	70210051	1	70210051	1
33	Pipe Pump PJV-1415	43130324	1	43130324	1
34	Pump Gasket	76712702	3	76712702	3
35	Pump Support	01332001	1	01332001	1
36	Water Level Switch	45010201	1	45010201	1
37	Drainage hose Pump	05232721	1	05232721	1
38	Right Side Plate	01302710	1	01302710	1
39	Cable-cross Loop	76512702	1	76512702	1
40	Pump Cover	01252710	1	01252710	1
41	Bolt	70212701	3	70212701	3
42	Electronic Expansive Valve	0713411201	1	0713411201	1

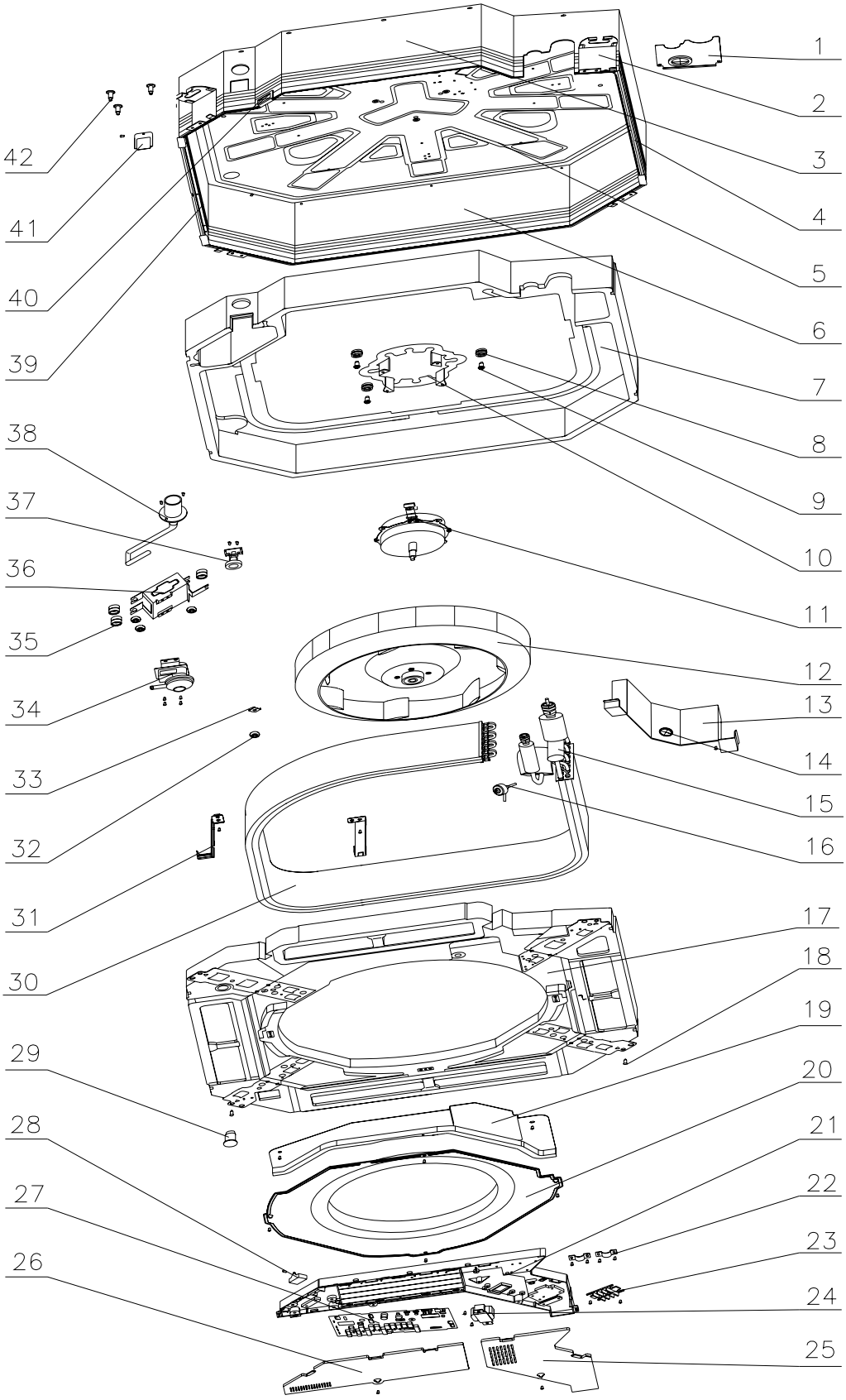
No.	Part Name	GMV-R56/63/71/80T/Na-K		GMVL-R56/63/71/80T/Na-K	
		Code	Qty.	Code	Qty.
1	Tube Exit Plate	01382711	1	01382711	1
2	Body Fixed Plate	01332701	4	01332701	4
3	Front Side Plate	01302718	1	01302718	1
4	Left Side Plate	01302715	1	01302715	1
5	Base Plate	01222702	1	01222702	1
6	Rear Side Plate	01302714	1	01302714	1
7	Bottom Foam	52012711	1	52012711	1
8	Motor Gasket	76712711	3	76712711	3
9	Bolt	70212701	3	70212701	3
10	Motor Fixer	01702701	1	01702701	1
11	Fan Motor	15704102	1	15704102	1
12	Centrifugal Fan	10312705	1	10312705	1
13	Evaporator Connection	01072710	1	01072710	1
14	Cable-cross Loop	76513101	2	76513101	2
15	shunt	07228806	1	07228806	1
16	Water Tray	12412701	1	12412701	1
17	Screw	70140032	4	70140032	4
18	Electric Box Base Plate	01412721	1	01412721	1
19	Flow Guide Loop	10372701	1	10372701	1
20	Electric Box	20102701	1	20102701	1
21	Wire Clamp	71010102	4	71010102	4
22	Terminal Board T360B	42011222	1	42011222	1
23	Transformer	43110233	1	43110233	1
24	Electric Box Cover I	20102702	1	20102702	1
25	Electric Box Cover II	20102703	1	20102703	1
26	Main Board	30226316	1	30226316	1
27	Capacitor	33010010	1	33010010	1
28	Rubber plug	76712701	1	76712701	1
29	Evaporator	01004641	1	01004641	1
30	Evaporator Support	01072715	2	01072715	2
31	Nut with Washer M6	70310012	1	70310012	1
32	Bolt subassembly	70210051	1	70210051	1
33	Pipe Pump PJV-1415	43130324	1	43130324	1
34	Pump Gasket	76712702	3	76712702	3
35	Pump Support	01332001	1	01332001	1
36	Water Level Switch	45010201	1	45010201	1
37	Drainage hose Pump	05232721	1	05232721	1
38	Right Side Plate	01302716	1	01302716	1
39	Cable-cross Loop	76512702	1	76512702	1
40	Pump Cover	01252711	1	01252711	1
41	Bolt	70212701	3	70212701	3
42	Electronic Expansive Valve	0713411401	1	0713411401	1

（2）GMV(L)-R100T/Na-K



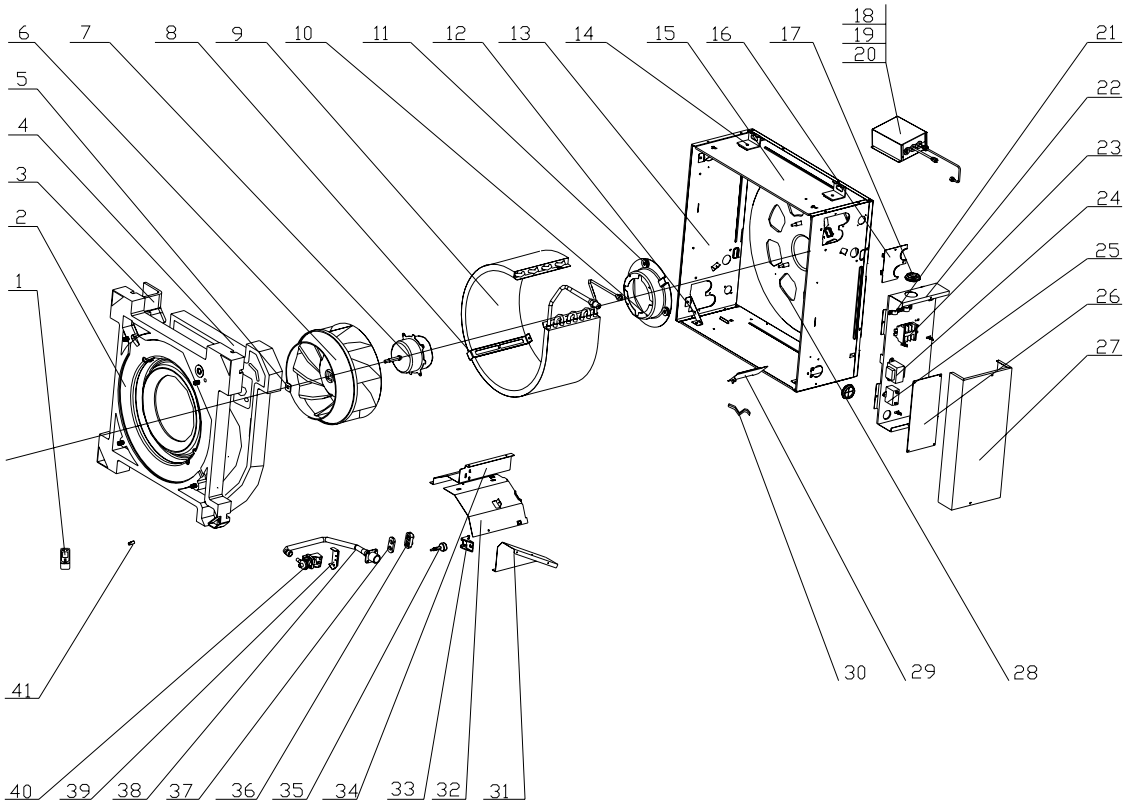
No.	Part Name	GMV-R100T/Na-K		GMVL-R100T/Na-K	
		Code	Qty.	Code	Qty.
1	Tube Exit Plate	01382711	1	01382711	1
2	Body Fixed Plate	01332701	4	01332701	4
3	Front Side Plate	01302713	1	01302713	1
4	Left Side Plate	01302711	1	01302711	1
5	Base Plate	01222702	1	01222702	1
6	Rear Side Plate	01302709	1	01302709	1
7	Bottom Foam	52012717	1	52012717	1
8	Motor Gasket	76712711	3	76712711	3
9	Bolt	70210051	4	70210051	4
10	Motor Fixer	01702701	1	01702701	1
11	Motor FN60T-1	15704103	1	15704103	1
12	Centrifugal Fan	10310101	1	10310101	1
13	Evaporator Connection	01072733	1	01072733	1
14	Cable-cross Loop	76515202	2	76515202	2
15	Gas Collector	07228804	1	07228804	1
16	One Way Valve	07334200	1	07334200	1
17	Electronic Expansile Valve VPF-25D18	07334102	1	07334102	1
18	Water Tray	12412701	1	12412701	1
19	Screw	70140032	4	70140032	4
20	Electric Box Base Plate	01412721	1	01412721	1
21	Flow Guide Loop	10372722	1	10372722	1
22	Electric Box	20102701	1	20102701	1
23	Wire Clamp	71010102	3	71010102	3
24	Terminal Board	42011222	1	42011222	1
25	Transformer	43110233	1	43110233	1
26	Electric Box Cover I	20102702	1	20102702	1
27	Electric Box Cover II	20102703	1	20102703	1
28	Main PCB	30226315	1	30226315	1
29	Capacitor	33010011	1	33010011	1
30	Evaporator	01032707	1	01032707	1
31	Evaporator Support	01072708	2	01072708	2
32	Nut with Washer M6	70310012	4	70310012	4
33	Fan Fixer	10312701	1	10312701	1
34	Pipe Pump PJV-1415	43130324	1	43130324	1
35	Pump Gasket	76712702	3	76712702	3
36	Pump Support	01332721	1	01332721	1
37	Water Level Switch	45010201	1	45010201	1
38	Drainage Pipe Pump	05230026	1	05230026	1
39	Right Side Plate	01302712	1	01302712	1
40	Cable-cross Loop	76512702	1	76512702	1
41	Pump Cover	01252711	1	01252711	1
42	Bolt	70212701	3	70212701	3

（3） GMV(L)-R90T/Na-K,GMV(L)-R112T/Na-K,GMV(L)-R125T/Na-K ， GMV(L)-R140T/Na-K



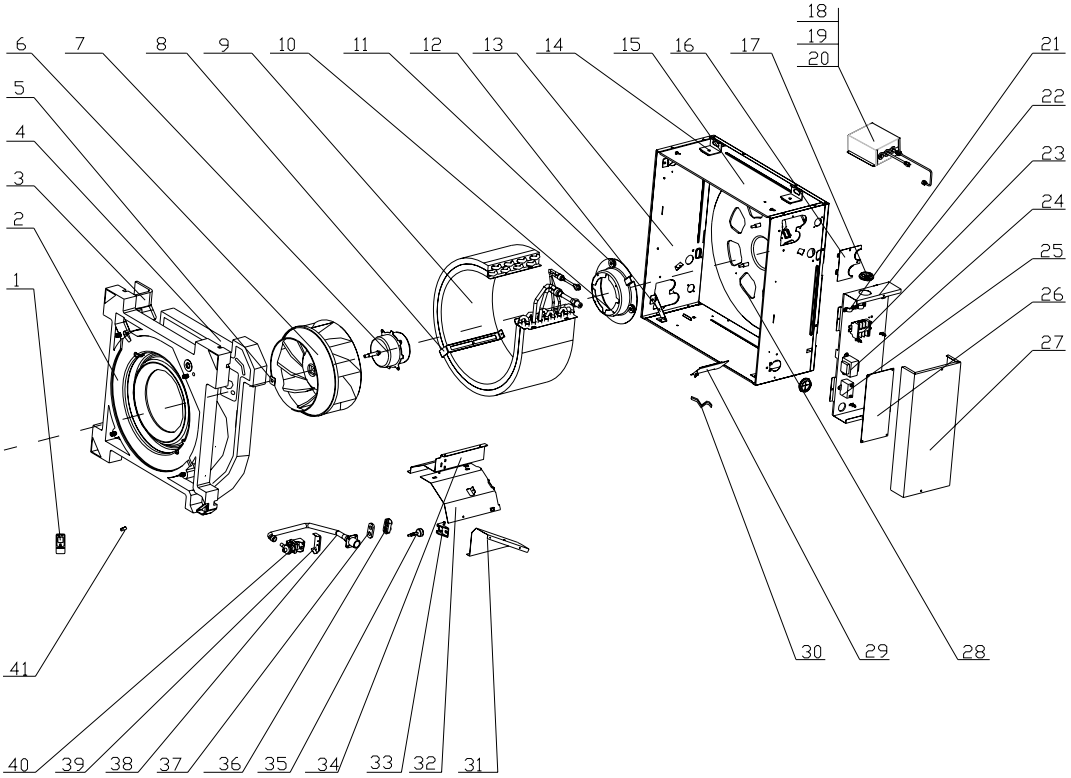
No.	Part Name	GMV-R90/112/125/140/Na-K		GMVL-R90/112/125/140/Na-K	
		Code	Qty.	Code	Qty.
1	Tube Exit Plate	01382711	1	01382711	1
2	Body Fixed Plate	01332701	4	01332701	4
3	Front Side Plate	01302713	1	01302713	1
4	Left Side Plate	`01302711	1	01302711	1
5	Base Plate	01222702	1	01222702	1
6	Rear Side Plate	01302709	1	01302709	1
7	Bottom Foam	52012717	1	52012717	1
8	Motor Gasket	76712711	3	76712711	3
9	Bolt	70212701	3	70212701	3
10	Motor Fixer	01702701	1	01702701	1
11	Fan Motor	15704103	1	15704103	1
12	Centrifugal Fan	10310101	1	10310101	1
13	Evaporator Connection	01072733	1	01072733	1
14	Cable-cross Loop	76512702	2	76512702	2
15	shunt	07228804	1	07228804	1
16	Electronic Expansive Valve	`07334102	1	07334102	1
17	Water Tray	12412701	1	12412701	1
18	Screw	70140032	4	70140032	4
19	Electric Box Base Plate	01412721	1	01412721	1
20	Flow Guide Loop	10372701	1	10372701	1
21	Electric Box	20102701	1	20102701	1
22	Wire Clamp	71010102	4	71010102	4
23	Terminal Board T360B	42011142	1	42011142	1
24	Transformer	43110233	1	43110233	1
25	Electric Box Cover I	20102702	1	20102702	1
26	Electric Box Cover II	20102703	1	20102703	1
27	Main Board	30226316	1	30226316	1
28	Capacitor	33010012	1	33010012	1
29	Rubber plug	76712701	1	76712701	1
30	Evaporator	01004640	1	01004640	1
31	Evaporator Support	01072708	2	01072708	2
32	Nut with Washer M6	70310012	1	70310012	1
33	Bolt subassembly	70210051	1	70210051	1
34	Pipe Pump PJV-1415	43130324	1	43130324	1
35	Pump Gasket	76712702	3	76712702	3
36	Pump Support	01332001	1	01332001	1
37	Water Level Switch	45010201	1	45010201	1
38	Drainage hose Pump	05232721	1	05232721	1
39	Right Side Plate	01302716	1	01302716	1
40	Cable-cross Loop	76512702	1	76512702	1
41	Pump Cover	01252711	1	01252711	1
42	Bolt	70212701	3	70212701	3

（4）GMV-R22T/NaA-K、GMVL-R22T/NaA –K、GMV-R28T/NaA-K、GMVL-R28T/NaA -Kexploded views



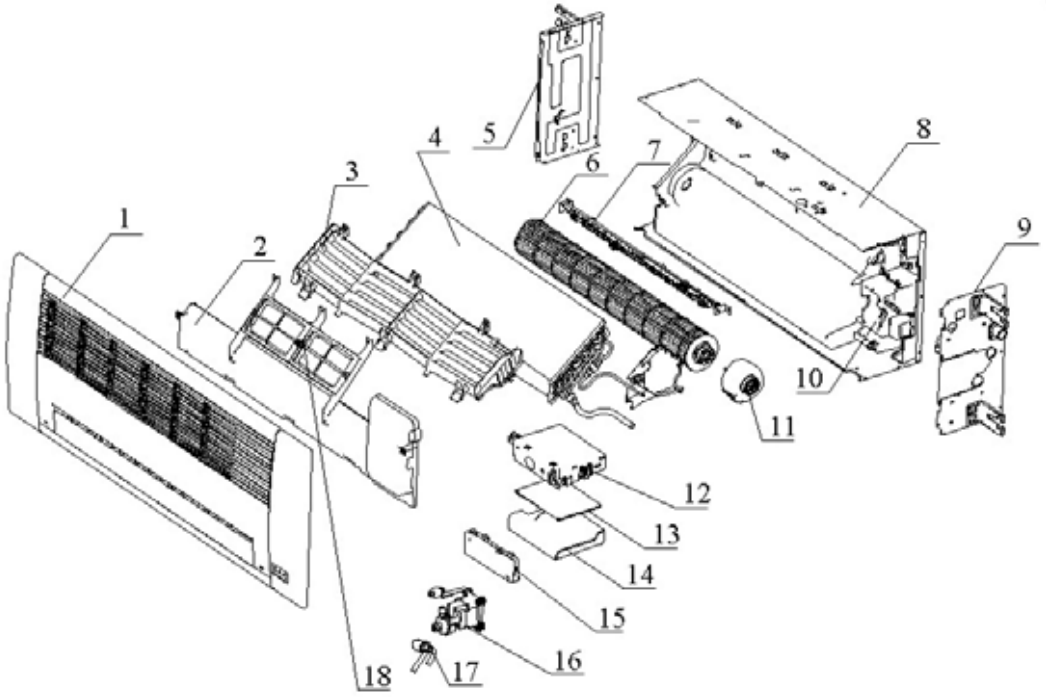
No.	Part Name	GMV-R22T/NaA –K GMV-R28T/NaA –K		GMVL-R22T/NaA –K GMVL-R28T/NaA –K	
		Code	Qty.	Code	Qty.
1	Display Board	30296309	1	30296308	1
2	Water Tray	20182703	1	20182703	1
3	Water Tray Foam for Fresh Air Intaking	12312702	1	12312702	1
4	Water Tray Foam	12312703	1	12312703	1
5	Fan Fixer	76712709	1	76712709	1
6	Centifugal Fan	10312702	1	10312702	1
7	Motor FN11T-1	15704114	1	15704114	1
8	Evap Support	01844136	1	01844136	1
9	Evaporator Assy	01024194	1	01024194	1
10	Motor Support	01702702	1	01702702	1
11	Motor Gasket	76712705	1	76712705	1
12	Water Tray support	01332706	1	01332706	1
13	Front Side Plate	01302741	1	01302741	1
14	Body Fixer	01332705	1	01332705	1
15	Right Side Plate	01302743	1	01302743	1
16	Tube-exit plate	01382719	1	01382719	1
17	Cable-cross Loop	76515202	1	76515202	1
18	Noise Elimination Box	07444103	1	07444103	1
19	Electronic Expansion Valve	07334282	1	07334282	1
20	Expansion Valve Winding	4304000101	1	4304000101	1
21	Wire Clamp	71010103	1	71010103	1
22	Electric Box Assy	01394806	1	01394807	1
23	Terminal Board	42011106	1	42011106	1
24	Transformer	43110226	1	43110226	1
25	Capacitor CBB61 2.5uF/450VAC	33010026	1	33010026	1
26	Main PCB Z6G25C	30226199	1	30226198	1
27	Electric Box Cover	01424238	1	01424238	1
28	Base Plate	01222712	1	01222712	1
29	Cord Baffle Plate	01362701	1	01362701	1
30	Connecting Wire	40010232	1	40010232	1
31	Left Baffle Plate	01362703	1	01362703	1
32	Evap Connection	01072713	1	01072713	1
33	Water Level Switch Support	24212705	1	24212705	1
34	Right Baffle Plate	01362702	1	01362702	1
35	Water Level Switch	45012701	1	45012701	1
36	Pump Gasket 1	76712707	1	76712707	1
37	Pump Gasket 2	76712708	1	76712708	1
38	Pump Drainage	05232722	1	05232722	1
39	Pump Support	01332707	1	1332707	1
40	Water Pump PSB-7	43130320	1	43130320	1
41	Wire Clamp	71010105	1	71010105	1

(5)GMV-R36T/NaA -K、GMVL-R36T/NaA -K、GMV-R45T/NaA -K、GMVL-R45T/NaA -K、exploded views



No.	Part Name	GMV-R36T/NaA –K GMV-R45T/NaA –K		GMVL-R36T/NaA –K GMVL-R45T/NaA –K	
		Code	Qty.	Code	Qty.
1	Display Board	30296309	1	30296308	1
2	Water Tray	20182703	1	20182703	1
3	Water Tray Foam for Fresh Air Intaking	12312702	1	12312702	1
4	Water Tray Foam	12312703	1	12312703	1
5	Fan Fixer	76712709	1	76712709	1
6	Centifugal Fan	10312702	1	10312702	1
7	Motor FN11T-1	15704114	1	15704114	1
8	Evap Support	01844136	1	01844136	1
9	Evaporator Assy	01024200	1	01024200	1
10	Motor Support	01702702	1	01702702	1
11	Motor Gasket	76712705	1	76712705	1
12	Water Tray support	01332706	1	01332706	1
13	Front Side Plate	01302741	1	01302741	1
14	Body Fixer	01332705	1	01332705	1
15	Right Side Plate	01302743	1	01302743	1
16	Tube-exit plate	01382719	1	01382719	1
17	Cable-cross Loop	76515202	1	76515202	1
18	Noise Elimination Box	07444103	1	07444103	1
19	Electronic Expansion Valve	07334282	1	07334282	1
20	Expansion Valve Winding	4304000101	1	4304000101	1
21	Wire Clamp	71010103	1	71010103	1
22	Electric Box Assy	01394806	1	01394807	1
23	Terminal Board	42011106	1	42011106	1
24	Transformer	43110226	1	43110226	1
25	Capacitor CBB61 2.5uF/450VAC	33010026	1	33010026	1
26	Main PCB Z6G25C	30226199	1	30226198	1
27	Electric Box Cover	01424238	1	01424238	1
28	Base Plate	01222712	1	01222712	1
29	Cord Baffle Plate	01362701	1	01362701	1
30	Connecting Wire	40010232	1	40010232	1
31	Left Baffle Plate	01362703	1	01362703	1
32	Evap Connection	01072713	1	01072713	1
33	Water Level Switch Support	24212705	1	24212705	1
34	Right Baffle Plate	01362702	1	01362702	1
35	Water Level Switch	45012701	1	45012701	1
36	Pump Gasket 1	76712707	1	76712707	1
37	Pump Gasket 2	76712708	1	76712708	1
38	Pump Drainage	05232722	1	05232722	1
39	Pump Support	01332707	1	1332707	1
40	Water Pump PSB-7	43130320	1	43130320	1
41	Wire Clamp	71010105	1	71010105	1

5.3.3 Single-side Cassette Unit_Exploded view and Parts List



GMV(L)-R22Td/Na-KParts List

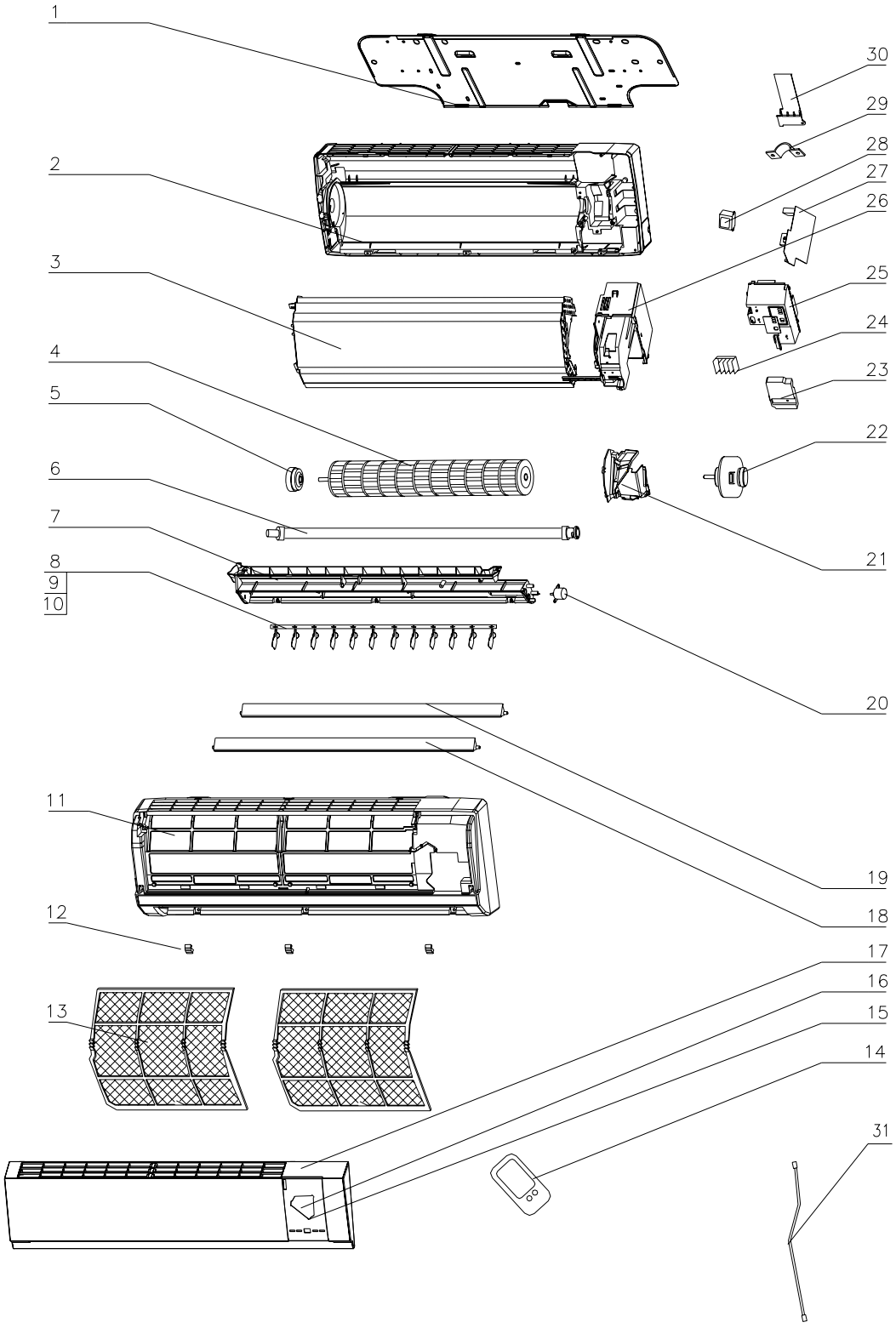
S/N	Part Name	Qty	Code	
			GMV-R22Td/Na-K	GMVL-R22Td/Na-K
1	Panel Assy（MT01 top）	1	TL1000120	TL1000120
2	Water Tray Assy	1	12412702	12412702
3	Water Diversion	1	24212708	24212708
4	Evaporator Assy	1	01024103	01024103
5	Right Side Plate Assy	1	01302729	01302729
6	Cross Flow Fan	1	10352701	10352701
7	Electric Heating Pipe Assy	—	——	——
8	Soleplate Assy	1	01222714	01222714
9	Right Side PlateAssy	1	01302746	01302746
10	Rear Case Assy	1	22202702	22202702
11	Motor FN20Z	1	15018762	15018762
12	Electric boxAssy	1	01404655	01404697
13	Mainboard	1	30226034	30226033
14	Electric box cover plate	1	01412725	01412725
15	Protective Cover of Patching Board	1	222427221	222427221
16	Draining Pump	1	43132701	43132701
17	Electric expansion valve Assy	1	07334129	07334129
18	Support	1	01792703	01792703

GMV(L)-R28Td/Na-K.GMV(L)-R36Td/Na-K Parts List

S/N	Part Name	Qty	Code	
			GMV-R28Td/Na-K；GMV-R36Td/Na-K	GMVL-R28Td/Na-；GMVL-R36Td/Na-K
1	Panel Assy（MT01top）	1	TL1000120	TL1000120
2	Water Tray Assy	1	12412702	12412702
3	Water Diversion	1	24212708	24212708
4	Evaporator Assy	1	01024104	01024104
5	Right Side PlateAssy	1	01302729	01302729
6	Cross Flow Fan	1	10352701	10352701
7	electric heating pipe Assy	—	——	——
8	SoleplateAssy	1	01222714	01222714
9	Right Side PlateAssy	1	01302746	01302746
10	Rear CaseAssy	1	22202702	22202702
11	Motor	1	15018762	15018762
12	Electric boxAssy	1	01404655	01404697
13	Mainboard	1	30226034	30226033
14	Electric boxcover plate	1	01412725	01412725
15	Protective Cover of Patching Board	1	222427221	222427221
16	Draining Pump	1	43132701	43132701
17	Electric expansion valve Assy	1	07334129	07334129
18	Support	1	01792703	01792703

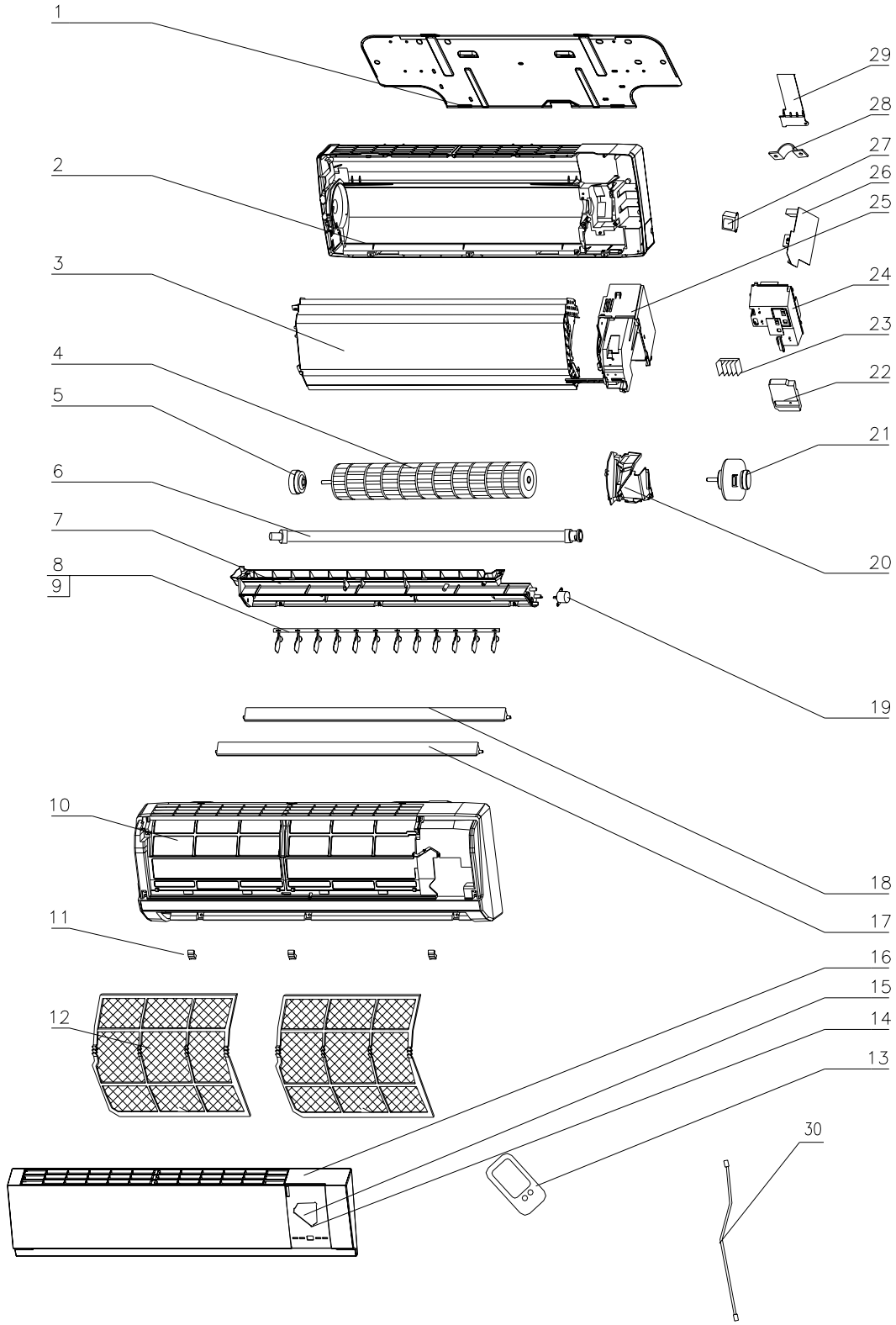
5.3 .4 Wall-Mounted Type Unit

（1）GMV(L)-R22G/NaB-K,GMV(L)-R28G/NaB-K



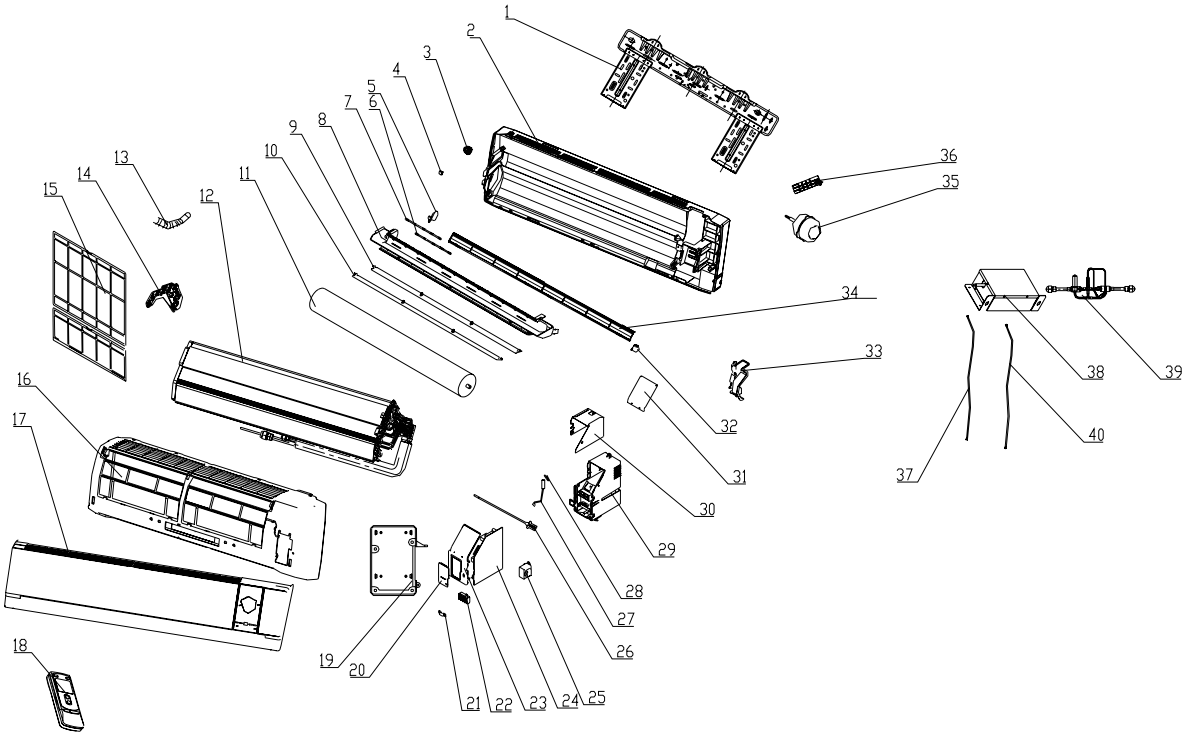
No.	Part Name	GMV(L)-R22G/NaB-K,GMV(L)-R28G/NaB-K	
		Code	Qty.
1	Wall-Mounting Frame	01252220	1
2	Rear Case	222020012	1
3	Evaporator Assy	01004628	1
4	Cross Flow Fan	10352001	1
5	Ring of Bearing	76512203	1
6	Drainage hose	0523001401	1
7	Water Tray	20182027	1
8	Swing Louver	10512032	1
9	Swing Linkage 1	10582002	1
10	Swing Linkage 2	10582003	1
11	Front Case	20002215	1
12	Screw Cover	24252006	3
13	Filter	11122002	2
14	Remote Control Y612C	305125033	1
15	Decorate Piece	68012019	1
16	Receiver Board	30545702	1
17	Front Panel	20002209	1
18	Guide Louver 2	10512034	1
19	Guide Louver 1	10512033	1
20	Motor MP28VA	15212110	1
21	Motor Clamp A	26112017	1
22	Motor FN14A	150121081	1
23	Electric Box Cover	22242030	1
24	Terminal Board T4B3A	42011233	1
25	Covering Plate	201220061	1
26	Electric Box	20102178	1
27	Main PCB Z6H15C	30226074	1
28	Transformer 48X26F	43110226	1
29	Wire Clamp	71010103	1
30	Rear Clamp	24242001	1
31	Signal Cable	400103953	1

（2）GMV(L)-R36G/NaB-K；GMV(L)-R45G/NaB-K



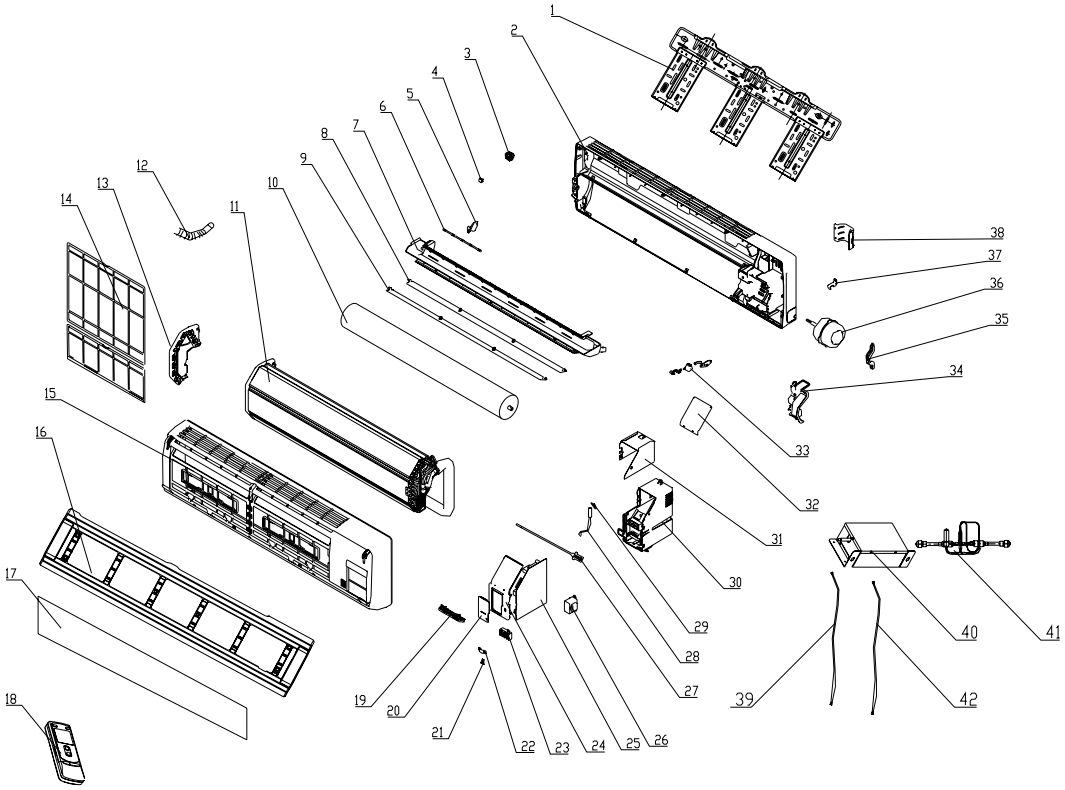
No.	Part Name	GMV(L)-R36G/NaB-K；GMV(L)-R45G/NaB-K	
		Code	Qty.
1	Wall-Mounting Frame	01252384	1
2	Rear Case	22202050	1
3	Evaporator Assy	01004629	1
4	Cross Flow Fan	10352005	1
5	Ring of Bearing	76712015	1
6	Drainage hose	05232411	1
7	Water Tray	20182030	1
8	Swing Louver	10512041	12
9	Swing Linkage	10582439	1
10	Front Case	200022955	1
11	Screw Cover	24252007	3
12	Filter	11122440	2
13	Remote Control Y612C	305160051	1
14	Decorate Piece	68012019	1
15	Receiver Board	30545552	1
16	Front Panel	20002292	1
17	Guide Louver	26112043	1
18	Guide Louver	26112042	1
19	Motor MP28EA	15212105	1
20	Right Motor Clamp	26112429	1
21	Motor FN22A	15012062	1
22	Electric Box Cover	22242017	1
23	Terminal Board T4B3A	42011233	1
24	Covering Plate	20102119	1
25	Electric Box	20102108	1
26	Main PCB Z6J15C	30226072	1
27	Transformer 48X26F	43110226	1
28	Wire Clamp	71010103	1
29	Rear Clamp	26112430	1
30	Signal Cable	400103953	1

（3）GMV(L)-R50G/NaB-K；GMV(L)-R56G/NaB-K



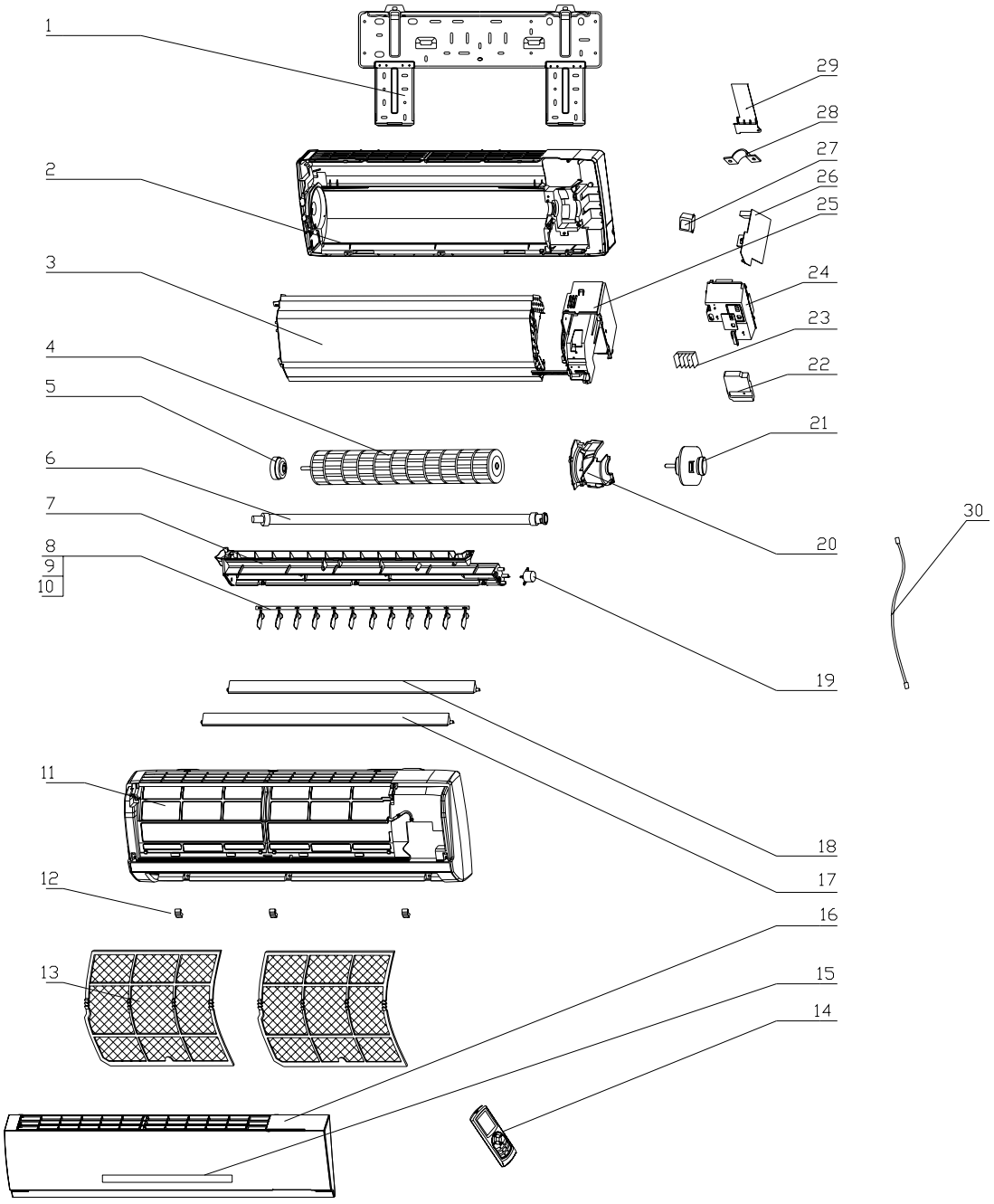
No.	Part Name	GMV(L)-R50G/NaB-K；GMV(L)-R56G/NaB-K	
		Code	Qty.
1	Wall-Mounting Frame	01252004	1
2	Rear Case	22202329	1
3	Fan Bearing	76512203	1
4	Screw Cover	24252015	3
5	Swing Louver	10512429	11
6	Swing Link 1	10582057	1
7	Swing Link 2	10582058	1
8	Water Tray	20182057	1
9	Guide Louver（up）	10512085	1
10	Guide Louver（down）	10512086	1
11	Cross Flow Fan	10352022	1
12	Evaporator Assy	01024147	1
13	Drainage hose	0523001403	1
14	Evaporator Support	24212067	1
15	Filter	11122048	2
16	Front Case	200026529	1
17	Front Panel	01544115	1
18	Remote Controller Y512	305125063	1
19	Displaying Light Board	22432071	1
20	Electric Box Cover 1	20112019	1
21	Wire Clamp	71010103	1
22	Terminal Board T4B3A	42011233	1
23	Electric Box Cover	20112020	1
24	Main PCB	30226116	1
25	Transformer 57X25C	43110237	1
26	Room Sensor 15k	3900019813	1
27	Tube Sensor 20k	3900019814	1
		3900019815	1
		3900019816	1
28	Sensor Insert	42020063	3
29	Electric Box	20112018	1
30	Lower Shield of Electric Box	01592037	1
31	Upper Shield of Electric Box	01592038	1
32	Stepping Motor MP35XY	15212117	1
33	Motor Clamp	26112095	1
34	Helicoid tongue	26252009	
35	Motor FN20C-PG	150120671	1
36	Pipe Clamp	24242001	1
37	Signal Cable	400103953	1
38	Fix sub-assy	01324110P	1
39	EXV sub-assy	07334255	1
40	Connecting Wire	40010267	1

（4）GMV(L)-R71G/Na-K；GMV(L)-R80G/Na-K



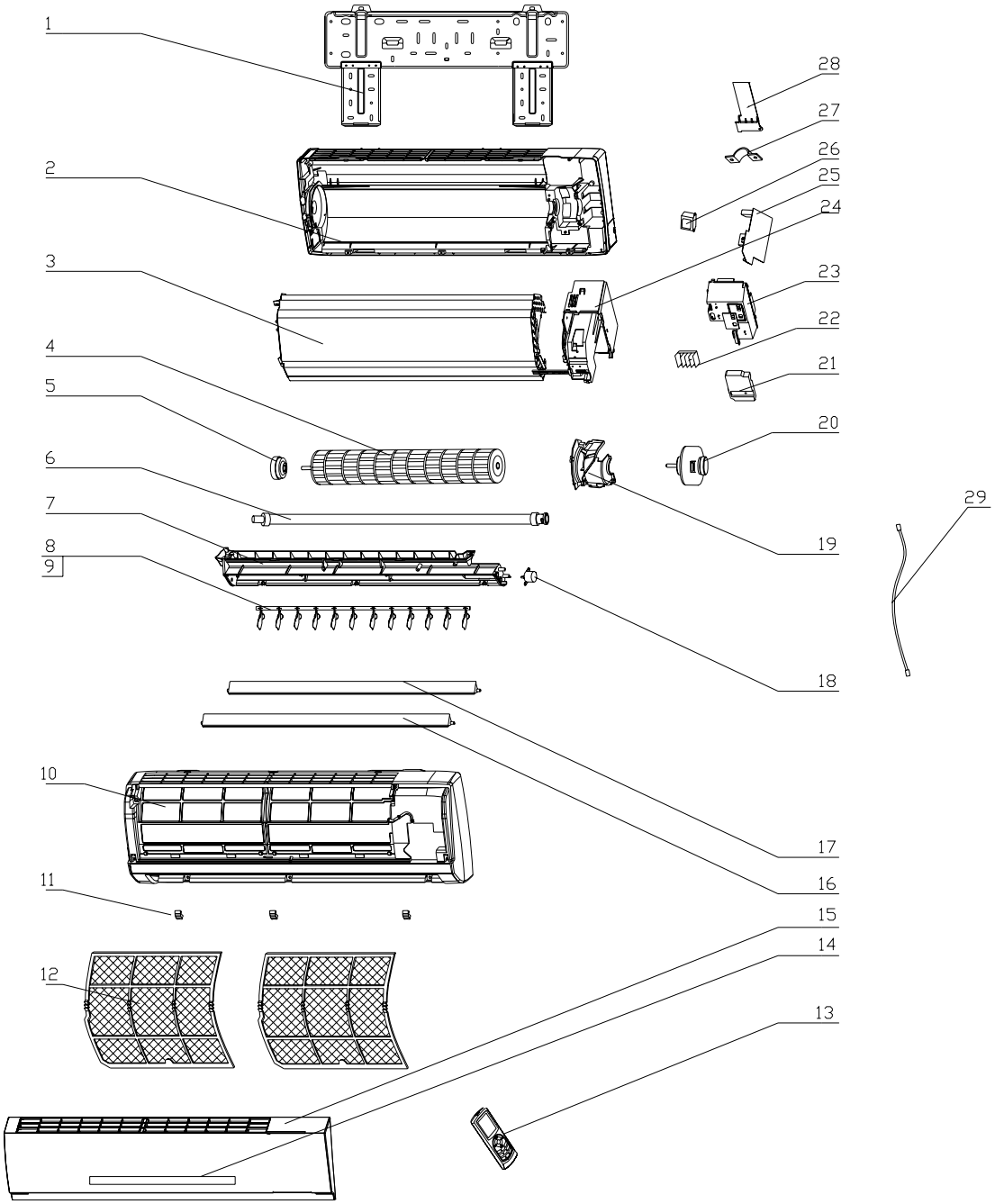
No.	Part Name	GMV(L)-R71G/Na-K；GMV(L)-R80G/Na-K	
		Code	Qty.
1	Wall-Mounting Frame	01252398	1
2	Rear Case	22202091	1
3	Fan Bearing	76512203	1
4	Screw Cover	242520053	3
5	Swing Louver	10512110	15
6	Swing Link	10582040	3
7	Water Tray	20182043	1
8	Guide Louver（up）	10512062	1
9	Guide Louver（down）	10512063	1
10	Cross Flow Fan	10352420	1
11	Evaporator Assy	0102411202	1
12	Drainage hose	0523001404	1
13	Evaporator Support（left）	24212041	1
14	Filter	11122051	2
15	Front Case	26904107	1
16	Front Panel	20002698	1
17	Front Panel A	22432258	1
18	Remote Controller Y512	305125063	1
19	Receiver Board JD	30046093	1
20	Electric Box Cover	20102252	1
21	Switch Lever	10582007	1
22	Wire Clamp	71010103	1
23	Terminal Board T4B3A	42011233	1
24	Electric Box Cover	201022513	1
25	Main PCB	30226420	1
26	Transformer 48X26G	43110233	1
27	Room Sensor	3900019813	1
28	Tube Sensor	3900019814	1
		3900019815	1
		3900019816	1
29	Sensor Insert	42020063	3
30	Electric Box	20102250	1
31	Lower Shield of Electric Box	01592034	1
32	Upper Shield of Electric Box	01592033	1
33	Stepping Motor MP24GA	15212102	1
34	Evaporator Support（rihgt）	24212042	1
35	Motor Clamp	26112069	1
36	Motor FN26D	150121053	1
37	Fixer(evaporator)	02112009	1
38	Pipe Clamp	26112071	1
39	Signal Cable	400103953	1
40	Fix sub-assy	01324110P	1
41	EXV sub-assy	07334255	1
42	Connecting Wire	40010267	1

（5）GMV(L)-R22G/NaC-K；GMV(L)-R28G/NaC-K



No.	Part Name	GMV(L)-R22G/NaC-K; GMV(L)-R28G/NaC-K	
		Code	Qty.
1	Wall Mounting Frame	01252220	1
2	Rear Case	222020012	1
3	Evaporator Assy	01004628	1
4	Cross Flow Fan	10352001	1
5	O-Gasket of Cross Fan Bearing	76512203	1
6	Drain Pipe	0523001401	1
7	Water Tray	201820272	1
8	Air Louver	10512080	1
9	Swing Lever	10582002	1
10	Swing Lever	10582003	1
11	Front Case	200024442	1
12	Screw Cap	24252006	3
13	Filter	11122002	2
14	Remote Control Y512	305125063	1
15	Display Board	30545707	1
16	Front Panel	20002522	1
17	Guide Louver	10512034	1
18	Guide Louver	10512033	1
19	Stepping Motor	15212110	1
20	Motor Press Plate	26112014	1
21	Fan Motor	150121081	1
22	Electric Box Cover	22242030	1
23	4-bit Terminal Board	42011233	1
24	Electric Box Cover	201220061	1
25	Electric Box	20102178	1
26	Main PCB Z6H251B	30226077	1
27	Transformer	43110226	1
28	Fixed Clamp	71010103	1
29	Pipe Clamp	24242001	1
30	Connecting Wire（communicate)	400103953	1

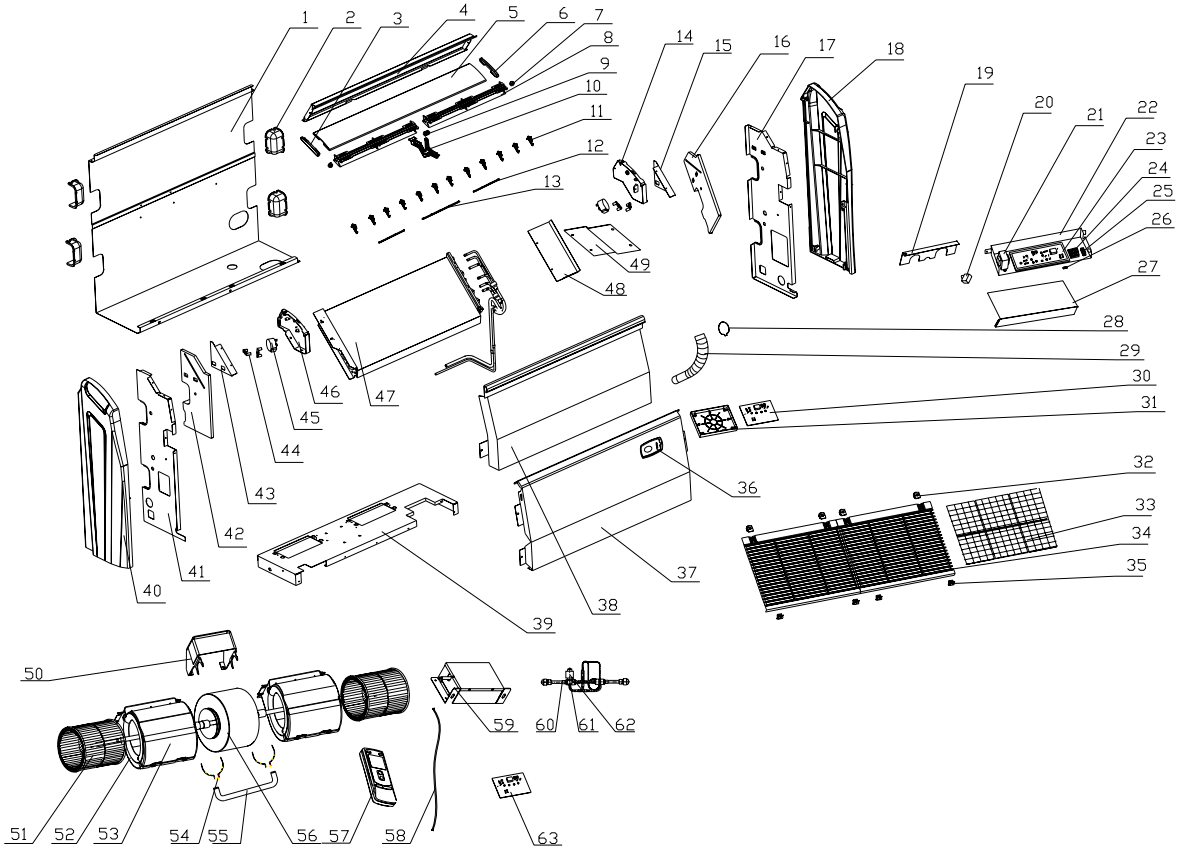
（6）GMV(L)-R36G/NaC-K；GMV(L)-R45G/NaC-K



No.	Part Name	GMV(L)-R36G/NaC-K；GMV(L)-R45G/NaC-K	
		Code	Qty.
1	Wall Mounting Frame	01252384	1
2	Rear Case Sub-Assy	22202051	1
3	Evaporator Assy	01004629	1
4	Cross Flow Fan	10352005	1
5	Ring of Bearing	76712015	1
6	Drain Pipe	0523001401	1
7	Water Tray	201820302	1
8	Air Louver	10512041	12
9	Swing Lever	10582439	1
10	Front Case	200025253	1
11	Screw Cap	24252007	3
12	Filter	11122440	2
13	Remote Control Y512	305125063	1
14	Display Board	30545558	1
15	Front Panel	20002524	1
16	Lower Guide Louver	26112043	1
17	Upper Guide Louver	26112042	1
18	Stepping Motor	15212105	1
19	Motor Right Clamp	26112429	1
20	Motor FN22G	150120623	1
21	Electric Box Cover	22242017	1
22	4-bit Terminal Board	42011233	1
23	Covering Plate	20102119	1
24	Electric Box	20102108	1
25	Main PCB Z6J251B	30226075	1
26	Transformer	43110226	1
27	Fixed Clamp	71010103	1
28	Rear Clamp	26112430	1
29	Connecting Wire（communicate)	400103953	1

5.3 .5 Floor Ceiling Type Unit

（1）GMV(L)-R28Zd/Na-K,GMV(L)-R36Zd/Na-K,GMV(L)-R50Zd/Na-K



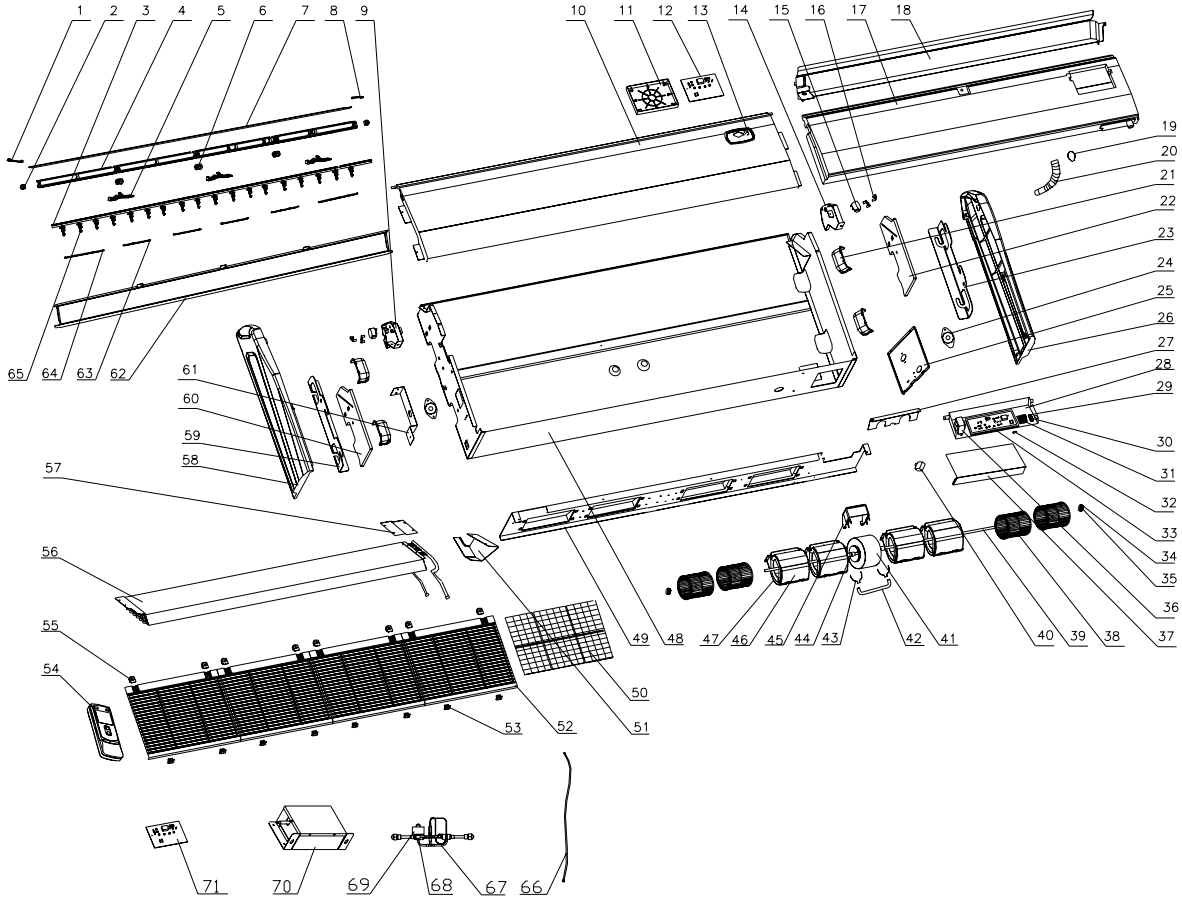
No.	Part Name	GMV(L)-R28Zd/Na-K,GMV(L)-R36Zd/Na-K,GMV(L)-R50Zd/Na-K	
		Code	Qty.
1	Rear Side Plate	01302013	1
2	Handle	26232001	4
3	Left Decoration Plate	261124152	1
4	Rear Side Plate of Air Outlet	0130201501	1
5	Louver	1051953202	1
6	Right Decoration Plate	261124162	1
7	Shaft of Louver II	10512026	2
8	Louver Support	24212019	2
9	Shaft of Louver I	10512025	1
10	Louver Fixer	24212018	1
11	Swing Louver	10512027	12
12	Connecting Lever	10582009	1
13	Connecting Lever	10582008	2
14	Right Swing Motor Fixer	26152006	1
15	Right Fixing Plate of Evaporator	01072411	1
16	Right Side Foam sub-assy	12312404	1
17	Right Fixing Plate	01332404	1
18	Right Decoration Panel	26112027	1
19	Pipe Clamp Plate	0107243701	1
20	Capacitor 1uF/500V	33010089	1
21	Transformer 57X25C	43110237	1
22	Electric Box	01402407	1
23	Main PCB Z6935	30226903	1
24	Terminal Board RS9413G	42011159	1
25	Wire Base	24253001	1
	Wire Clamp	24253002	1
26	Fuse 5A 250VAC	46010013	1
27	Cover of Electric Box	01412408	1
28	Pipe Clip	70812001	1
29	Drainage hose	05235433	1
30	Display Board 5T52	30545654	1
31	Electric Box	20102138	1
32	Front Grill Clip 1	26252002	4
33	Filter	11122013	2
34	Front Grill	22412010	2
35	Front Grill Clip 2	26252003	4
36	Front Panel	01544106	1
37	Front Panel	01532001P	1
38	Water Tray Panel	01272205P	1
39	Motor Support	01709532	1
40	Left Decoration Panel	26112028	1
41	Left Fixing Plate	01332405	1

No.	Part Name	GMV(L)-R28Zd/Na-K,GMV(L)-R36Zd/Na-K,GMV(L)-R50Zd/Na-K	
		Code	Qty.
43	Left Fixing Plate of Evaporator	01072410	1
44	Motor Clamp	26112026	4
45	Step Motor MP35CA	15212402	2
46	Left Swing Motor Fixer	26152005	1
47	Evaporator Assy	01024134 ①	1
		01024135 ②	1
		01024121 ③	1
48	Water Lead Panel	01362001	1
49	Cover of Evaporator	01072409	1
50	Fixed Mount	01708763	1
51	Centrifugal Fan	10312401	2
52	Rear Snail Shell	22202032	2
53	Front Snail Shell	22202031	2
54	Bar Clasp	70819522	4
55	Hoop	70819521	1
56	Motor	15707302 ④	1
		157073024 ⑤	1
57	Remote Controller	305125063	1
58	Signal Cable	400103953	1
59	Fix sub-assy	01324110P	1
60	EXV sub-assy	07334258	1
61	EXV SPF-16D70	07334191	1
62	Magnet Coil for EXV DPF-AS001A	430001087	1
63	Display Board Z63351F	30296309	1

Note:

a) Evaporator Assy ① is only applicable to GMV(L)-R28Zd/Na-K
b) Evaporator Assy ② is only applicable to GMV(L)-R36Zd/Na-K
c) Evaporator Assy ③ is only applicable to GMV(L)-R50Zd/Na-K
d) Motor ④ is only applicable to GMV(L)-R28Zd/Na-K,GMV(L)-R36Zd/Na-KMotor
e) Motor⑤ is only applicable to GMV(L)-R50Zd/Na-K

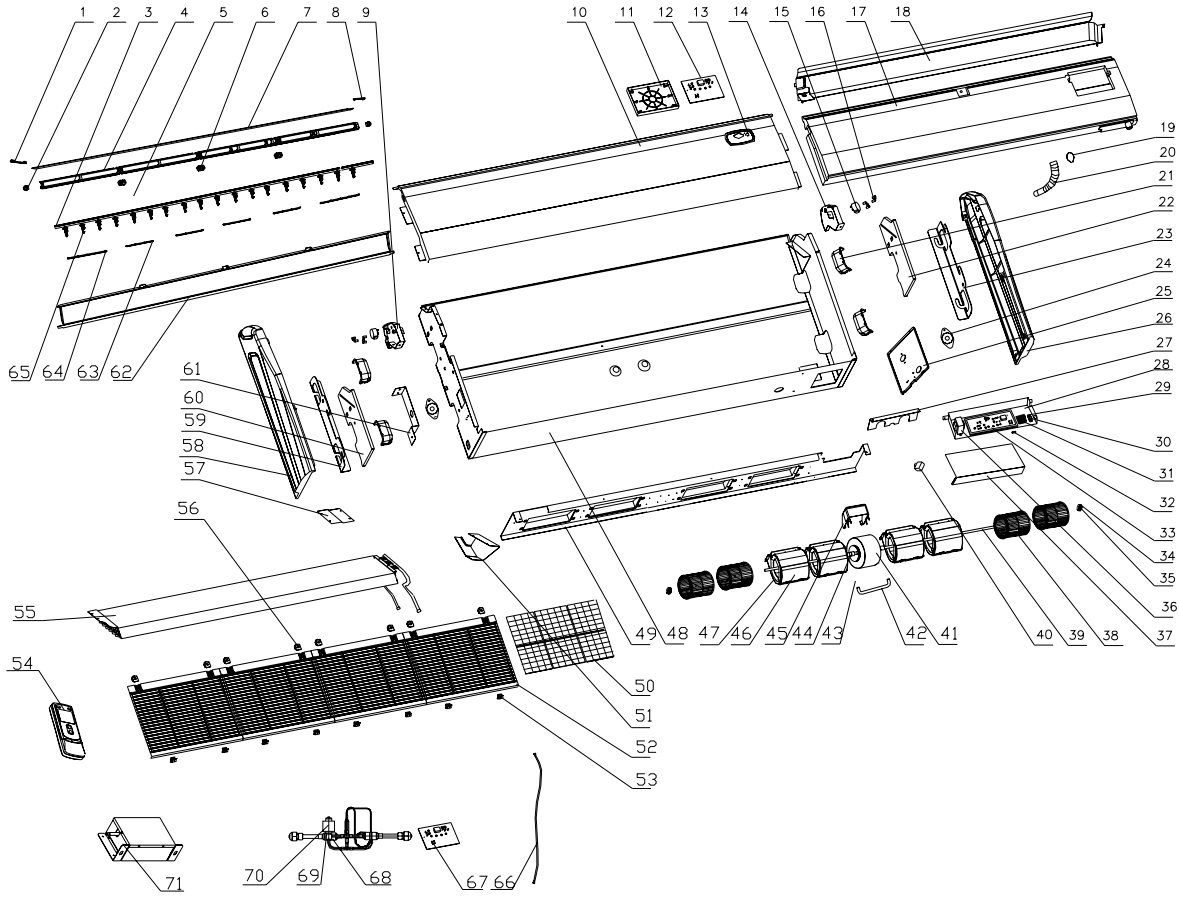
（2）GMV(L)-R71Zd/Na-K



No.	Part Name	GMV(L)-R71Zd/Na-K	
		Code	Qty.
1	Left Decoration Plate	261124172	1
2	Shaft of Louver I	10512025	2
3	Swing Louver Fixer sub-assy	013324232	1
4	Louver Support	24212020	3
5	Louver Fixer	24222016	2
6	Louver	105124042	1
7	Shaft of Louver II	10512026	2
8	Right Decoration Plate	261124212	1
9	Left Swing Motor Fixer	26152007	1
10	Front Panel	01532414	1
11	Display Box	20102138	1
12	Display Board 5T52	30545654	1
13	Front Panel	01544106	1
14	Right Swing Motor Fixer	26152008	1
15	Step Motor MP35CA	15212402	2
16	Motor Clamp	26112026	4
17	Water Tray	01272412	1
18	Auxiliary Water Tray	01272413	1
19	Pipe Clip	70812001	1
20	Drainage hose	05235433	1
21	Handle	26232001	4
22	Right Side Foam sub-assy	12312407	1
23	Right Fixing Palte	01332404	1
24	Support of Motor Bearing	01792408	2
25	Fixer of Motor Support	01792409	1
26	Right Decoration Panel	26112033	1
27	Pipe Clamp	01072424	1
28	Electric Box	01402407	1
29	Wire Base	24253001	1
30	Wire Clamp	24253002	1
31	Terminal Board	42011159	1
32	Fuse 5A 250VAC	46010013	1
33	Main PCB Z6935	30226903	1
34	Ring of Bearing	76512404	2
35	Fan Bearing	76512210	2
36	Transformer 57X25C	43110237	1
37	Cover of Electric Box	01412408	1
38	Centrifugal Fan	10312401	4
39	Rotary Axis	73012401	2
40	Capacitor CBB61 3uF/450	33010027	1
41	Motor FN100A	15012406	1
42	Motor Fixer	01722409	1
43	Motor Clamp	01702405	2
44	Axes Connector	73012403	2

45	Motor Fixing Plate	01332426	1
46	Front Snail Shell	22202031	4
47	Rear Snail Shell	22202032	4
48	Rear Side Plate	01302429	1
49	Motor Support	01702410	1
50	Filter	11122012	2
51	Water Lead Plate	01362401	1
52	Front Grill	22412011	2
53	Front Grill Clip 2	26252003	4
54	Remote Controller	305125063	1
55	Front Grill Clip 1	26252002	4
56	Evaporator Assy	01024123	1
57	Cover of Evaporator	01072417	1
58	Left Decoration Panel	26112032	1
59	Left Fixing Plate	01332405	1
60	Left Side Foam sub-assy	12312406	1
61	Bearing Fixing Plate	01332407	1
62	Rear Side Plate of Air Outlet	01302405	1
63	Connecting Lever	10582008	3
64	Connecting Lever	10582009	2
65	Swing Louver	10512028	22
66	Signal Cable	400103953	1
67	EXV sub-assy	07334255	1
68	EXV SPF-18D88	07334193	1
69	Magnet Coil for EXV	430001087	1
70	Fix sub-assy	01324110P	1
71	Display Board Z63351F	30296309	1

（3）GMV(L)-R90Zd/Na-K,GMV(L)-R112Zd/Na-K,GMV(L)-R125Zd/Na-K



No.	Part Name	GMV(L)-R90Zd/Na-K, GMV(L)-R112Zd/Na-K, GMV(L)-R125Zd/Na-K	
		Code	Qty.
1	Left Decoration Plate	261124152	1
2	Shaft of Louver I	10512025	3
3	Swing Louver Fixer sub-assy	0133241802	1
4	Louver Support	24212019	4
5	Louver Fixer	24212018	3
6	Shaft of Louver II	10512026	2
7	Louver	105124082	1
8	Right Decoration Plate	261124162	1
9	Left Swing Motor Fixer	26152005	1
10	Front Panel	01532413	1
11	Display Box	20102138	1
12	Display Board 5T52	30545654	1
13	Front Panel	01544106	1
14	Right Swing Motor Fixer	26152006	1
15	Step Motor MP35CA	15212402	2
16	Motor Clamp	26112026	4
17	Water Tray	0127240802	1
18	Auxiliary Water Tray	01272409	1
19	Pipe Clip	70812001	1
20	Drainage hose	05235433	1
21	Handle	26232001	4
22	Right Side Foam sub-assy	12312404	1
23	Right Fixing Palte	01332404	1
24	Support of Motor Bearing	01792408	2
25	Fixer of Motor Support	01792407	1
26	Right Decoration Panel	26112027	1
27	Pipe Clamp	01072425	1
28	Electric Box	01402407	1
29	Wire Base	24253001	1
30	Wire Clamp	24253002	1
31	Terminal Board	42011159	1
32	Fuse 5A 250VAC	46010013	1
33	Main PCB Z6935	30226903	1
34	Ring of Bearing	76512404	2
35	Fan Bearing	76512210	1
36	Transformer 57×25C	43110237	1
37	Cover of Electric Box	01412408	1
38	Centrifugal Fan	10319051	4
39	Rotary Axis	73012402	2
40	Capacitor	33010064 ①	1
		33010056 ②	1
41	Motor	15012405 ③	1
		15012404 ④	1

42	Motor Fixer	01722410	1
43	Motor Clamp	01702405	2
44	Axes Connector	73012403	2
45	Motor Fixing Plate	01332425	1
46	Front Snail Shell	22202030	4
47	Rear Snail Shell	22202029	4
48	Rear Side Plate	01302431	1
49	Motor Support	01702411	1
50	Filter	11122013	1
51	Water Lead Plate	01362407	1
52	Front Grill	22412010	4
53	Front Grill Clip 2	26252003	8
54	Remote Controller	305125063	1
55	Evaporator Assy	01024122	1
56	Front Grill Clip 1	26252002	8
57	Cover of Evaporator	01072409	1
58	Left Decoration Panel	26112028	1
59	Left Fixing Plate	01332405	1
60	Left Side Foam sub-assy	12312403	1
61	Bearing Fixing Plate	01332406	1
62	Rear Side Plate of Air Outlet	01302416	1
63	Connecting Lever	10582008	2
64	Connecting Lever	10582009	4
65	Swing Louver	10512027	26
66	Signal Cable	400103953	1
67	Display Board Z63351F	30296309	1
68	EXV sub-assy	07334256	1
69	EXV VPF-25D*B3	07334195	1
70	Magnet Coil for EXV	43000110	1
71	Fix sub-assy 2	01324110P	1

Note:

a) Capacitor ① is only applicable to GMV(L)-R90Zd/Na-K
b) Capacitor ② is only applicable to GMV(L)-R112Zd/Na-K,GMV(L)-R125Zd/Na-K
c) Motor ③ is only applicable to GMV(L)-R90Zd/Na-K
d) Motor ④ is only applicable to GMV(L)-R112Zd/Na-K,GMV(L)-R125Zd/Na-K